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TABLE OF CONTENTS

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ORIGINAL ARTICLES

DIAGNOSTIC PITFALLS. THE LATE EFFECTS OF GASSING VS. TUBERCULOSIS. *By John B. Hawes, 2nd, M.D.*, Boston. 1

THE POST-OPERATIVE TREATMENT OF URINARY LITHIASIS. *By Edward L. Young, Jr., M.D.*, Boston. 4

A CANCER QUESTION: R. S. V. P. *By S. W. Little, M.D.*, Rochester, N. Y. 9

SYMPTOMS AND TREATMENT OF ACUTE CARDIAC FAILURE. REPORT OF A CASE. *By Thomas J. O'Brien, M.D.*, Boston. 15

VESICO-INTESTINAL FISTULA: REPORT OF A CASE: END-RESULTS. *By F. F. Doggett, M.D.*, Boston. 22

PROLAPSE OF THE UTERUS DURING PREGNANCY. *By G. M. Garland, M.D.*, Boston. 25

WEIGHT PREDICTION BY THE FORMULAE OF BORNHARDT, OF VON PIRQUET AND DREYER. *By H. Gray, M.D.*, Boston, *and Howard F. Root, M.D.*, Boston. 28

BOOK REVIEWS

Orthopedic Surgery of Injuries. 32

Injuries and Diseases of Bones and Joints. By Baetjer and Waters. 33

CURRENT LITERATURE DEPARTMENT

INDUSTRIAL LEAD POISONING. 34

THE DIAGNOSIS OF PREGNANCY BY THE ROENTGEN RAY. 34

SOME FACTS RELATING TO THE TOXIC ACTION OF ARSPHENAMINE. 34

EDITORIALS

SOME QUESTIONS RELATING TO TUBERCULOSIS. 35

A BUST OF MORTON FOR THE HALL OF FAME. SEND YOUR CONTRIBUTIONS NOW. 36

MEDICAL NOTES 36

MISCELLANY

REPORT OF A SUCCESSFUL RESECTION OF THE ESOPHAGUS. 38

THE SHEPPARD-TOWNER MATERNITY BILL. 39

THE SUPREME TEST. 39

INDUSTRIAL RESEARCH LABORATORIES. 40

INFANTS THRIVE ON MATERNAL NURSING. 40

AMERICAN NURSES' MEMORIAL IN FRANCE. 41

EXCERPTS FROM BULLETIN OF SANITARY INSTRUCTION. 42

TWENTY-FOURTH ANNUAL MEETING OF THE MEDICAL LIBRARY ASSOCIATION. 42

RÉSUMÉ OF COMMUNICABLE DISEASES, MAY, 1921. 43

OBITUARY

DR. GEORGE DANIEL MCGAURAN 44

CORRESPONDENCE

PROHIBITION AND THE MEDICAL PROFESSION. 44

Original Articles.

DIAGNOSTIC PITFALLS. THE LATE EFFECTS OF GASSING VS. TUBERCULOSIS.

BY JOHN B. HAWES, 2ND, M.D., BOSTON.

DURING the past year, among other duties, I have acted as regional consultant in diseases of the chest for the New England District of the United States Public Health Service. I have seen, usually at my office, but occasionally at hospitals, sanatoria, or in their own homes, several hundred men in whom there was some question as to tuberculosis, and, indeed, in the greater number of whom a definite diagnosis of tuberculosis had already been made. I have treated and examined these men exactly as I would my own private patients, so that I have had a good opportunity to talk with them frankly and to come to a definite diagnosis in each instance. It is true that, in many cases, I have not had the help of x-ray examinations nor of temperature and pulse observations. I see these men usually only once. They tell me their story, usually very frankly, and, I believe, honestly. I then examine them, weigh the evidence, and endeavor to come to a fair conclusion. As I said before, the great majority of these men have already been tagged as consumptives.

Sometimes, I feel that the world, or at least this part of it, is tuberculosis mad. Ten or fifteen years ago, I stepped in "where angels fear to tread," and made diagnoses of early pulmonary tuberculosis in cases where there was no positive sputum, and urged others to do the same, and not to wait, as was the custom at that time, until the sputum became positive. This, the younger physicians, especially, have done with a vengeance and with splendid enthusiasm, so that now one of my chief functions in life, at least as far as my work with the Public Health Service is concerned, appears to be that of an "unmaker of diagnoses of pulmonary tuberculosis." It is an easy thing to pass the buck to the other fellow, to take the easier course, and to say, "Here is a man with a cough who has lost weight and strength; the x-ray shows some suspicious spots; let us call it tuberculosis, anyway, and send him to a sanatorium." And so to add to his other troubles, the poor fellow is tagged with tuberculosis, whether or not it was gas, influenza, trench or barrack-room bronchitis, or simply nervous exhaustion, that was the true cause of his symptoms. Those men who were gassed in France during the summer and fall of 1918, are striking examples of such errors in diagnosis. Far too many of them, as my own figures will show, as well as the testimony of others, have already been classified as consumptives.

Now, in order to understand and explain the symptoms and signs found at the present time in these men who were gassed over two years ago, it is necessary to know, as far as possible, exactly what these irritating gases do, and have done, to the lungs and to other parts of the respiratory tract. Of the immediate effects of gas, we know a great deal, from clinical and pathological sources, as well as from animal experimentation. Of the late effects, and as to what is now going on in the lungs of those men gassed in 1918, whom I am now constantly seeing, we know remarkably little. In a general way, we do know, however, that such gases owe their efficiency to their irritative and escharotic effects on the respiratory tract, and that the contraction of the scars thus produced may, and often does, lead to serious and progressive mechanical difficulties, not only to the ingress and egress of air into the bronchi, bronchioli and alveoli, but to the pulmonary circulation as well. It is also known that these gases have a certain selective action;—mustard gas, for instance, affecting, chiefly, the upper air passages, while chlorine gas injures the lining of the entire respiratory tract, resulting, frequently, in chronic lung lesions. Phosgen, least severe in its immediate effects upon the lungs, for this very reason perhaps, owing to Nature's effort to heal, often leads to serious injury to the lung tissue. Further details as to the exact pathology of the effects of gas on lung tissue are difficult to obtain and, indeed, are unnecessary in the present discussion. Suffice it to say that the basis of these changes caused by gas is a proliferative fibrosis which destroys, to a greater or less extent, as the case may be, the natural protective properties of the bronchi and leads to their invasion by secondary organisms. While tuberculosis may play a part in this secondary invasion, in my own experience at least, it is a very minor one.

As would naturally be expected from the pathology of this condition, x-ray examination of the lungs in these gas cases shows a very definite picture. There is usually considerable increase in the tissues around the hilus of the lung, marked increase of peribronchial tissues extending toward, but rarely into, the parenchyma and more toward the bases than upward. The apices themselves are usually clear. In addition to this, there are often localized areas of dense fibrosis.

There are two groups of symptoms presented by these gas cases as they appear at present,—signs and symptoms referred to the lungs and the constitutional group. Prominent among the first are:

1. Cough.
2. Sputum.
3. Hemorrhage.
4. Pain, or a sense of constriction in the chest.
5. Dullness, usually at the bases, and due to a thickened pleura.
6. Diminished voice and breath sounds due to the same cause, and
7. Râles of every variety and description.

Among the constitutional symptoms are:

1. Loss of strength and ease of fatigue.
2. Shortness of breath.
3. Signs and symptoms of a marked psychoneurosis, such as a tendency to dilate upon and exaggerate symptoms in every way, along with increased reflexes.

This last group, which I regard as most characteristic of this condition, is a difficult one to judge correctly without doing the patient injustice. Fever, rapid pulse, loss of weight, anemia, and other symptoms characteristic of tuberculosis, are conspicuous by their absence. And yet the majority of these men have been, and are, constantly diagnosed as having pulmonary tuberculosis. These men often give a history of sudden, acute febrile attacks with, or often without cough and sputum. These attacks come on out of a clear sky and are accompanied by a high fever; they disappear as suddenly as they come, leaving a feeling of intense lassitude, which lasts for a considerable time. Such sudden attacks are very characteristic of these late gas cases.

In 1916, Tovell and Elliott,[*] basing their observations on a series of 100 cases of gas poisoning, comment on the frequent persistence of symptoms related to shell-shock, along with bronchitis, often lasting over a year. In a later communication, in 1917,[†] they confirm what they stated in 1916, that it is rare for tuberculosis to become activated by gas poisoning. "They have many of the symptoms of early tuberculosis. They require rest and out-of-door treatment, but comparatively few of them have tuberculosis." With this statement I am in hearty accord. Stewart, Miller, and others in this country, as well as French observers, are of the same opinion, namely, that gas poisoning only rarely causes or activates tuberculosis.

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[*] Internat. Journal of Surgery. December, 1916.

[†] Elliott: Trans. National Tuberculosis Association. Thirteenth Annual Meeting, 1917, p. 62.

In looking over 35 gas cases that I have taken at random from my files among the men whom I have examined during the past eight months, I noted various points of interest. These I have briefly summarized as follows:

All of these 35 men had either been definitely diagnosed as having pulmonary tuberculosis, or else were classed as "Tb. suspects." In only eight instances, however, was I able to confirm this diagnosis, and in only one case did I find any signs of active tuberculosis. Cough and sputum, certainly prominent symptoms of tuberculosis, were present in 28 and 25 cases, respectively, while 20 out of the 35 complained of shortness of breath, and 18 of loss of strength. There were nine, or about 25%, who gave a history, at least, of having raised blood or bloody mucous. Loss of weight was a comparatively rare symptom, and, in the majority of instances, these men gave an appearance of good health and were well developed and nourished. The temperature and pulse were usually normal, and in only four cases was the blood pressure abnormally low. Coming to the physical examination of the chest, I did not find the striking resemblance to tuberculosis that is present in the symptomatology of these cases. Localized dullness, with or without dry, sticky râles at the base of the lungs, was the striking feature present in the majority, except in the eight men whom I diagnosed as having had a tuberculous process. The signs in these eight, naturally enough, were at the apices, except in one instance, where there had been a pleurisy with effusion. Thus, out of these 35 men who had been gassed over two years ago, and who had been definitely diagnosed either as having pulmonary tuberculosis or suspected of having it, and who came to me complaining of coughing, the raising of sputum, loss of strength and shortness of breath, there were only eight in whom I could satisfy myself that there had been tuberculosis, and only one who had any signs of an active process.

Here, then, is a difficult problem. How are we going to pick from this group of men, of whom the 35 that I have here given are striking examples, those who really have tuberculosis, and separate them from the great majority of their fellows who are suffering from the after-effects of gas on the lungs, and especially from the nervous exhaustion and shock to the central nervous system accompanying it? There is no short cut to this goal. Time, thoroughness, and common sense, along with a patient and detailed history-taking and physical examination, are the requisites necessary to reach a correct diagnosis.

I do not believe that this work can be done wholesale. It is absolutely necessary to obtain the man's confidence and to make him firmly believe that he is listening to an interested and sympathetic advisor. There are, in addition, certain points that will help in coming to a right conclusion;—first, the general appearance of health and strength in these men in contrast to the apparent severity of the symptoms of which they complain. I have had many men weighing over 175 pounds, of a good healthy color and appearance, with splendid muscular development, tell me that they were made miserable by constant coughing and raising of sputum, and that it was a great exertion to go upstairs, and that to run, even a hundred yards, was impossible. To tell these men and to take it for granted, that they were malingering or were wilfully exaggerating their symptoms, would accomplish nothing, and, in addition, would be an act of extreme injustice. While in many cases the desire to obtain the top limit of compensation and total disability is a factor, I do not honestly believe that it is such an important one as generally believed to be the case, as far as I can judge from my own experience. I do feel, however, that if tuberculosis were the cause of the symptoms, such as cough, sputum and hemorrhages as described by these men, they would be vastly sicker than they really were. This is important to bear in mind.

Next of importance is the fact that the changes in the lungs are found chiefly at the bases and rarely at the apices, and that these changes consist of a thickened pleura and a bronchitis, localized, or generalized, with no evidence of consolidation or cavity formation. The fact that the temperature and pulse are usually normal, and that such would not be the case in an equal number of men with active pulmonary tuberculosis, should also be borne in mind. Wherever possible, detailed observations of the temperature and pulse, and x-ray examination should be obtained. This, however, in my own work at least, I can rarely have done. A sputum constantly negative over numerous examinations, is additional evidence against tuberculosis.

As far as treatment is concerned, there is often very little difference between that needed by these men suffering from the late effects of gas poisoning and those who really have consumption, except that the latter should go to a sanatorium or hospital and the former should not. Rest, away from a medical atmosphere, and particularly, sympathy and encouragement will bring about the best results. Our Public Health Hospitals, Sanatoria, and Convalescent Homes are full of these men. Many of them are discontented and unhappy, and are firmly convinced that even if they have been definitely told that they have not consumption, the truth is simply being kept from them. I cannot overstate the importance of telling these men frankly that, although they are not in good condition, and still need treatment and supervision, they need not worry about having tuberculosis, so that this load, at least, may be taken off their minds.

The problem is a difficult one, but I feel sure that thoroughness, patience, attention to the striking points of difference between the symptom-complex of late gas poisoning as outlined above and tuberculosis, as well as sympathy and encouragement to the patient, will, in the long run, bring about the best results.

The points to be remembered are- the following:

1. Do not take it for granted that a given process is tuberculous, even with a suggestive x-ray.
2. Do not do the reverse.
3. A general appearance of robust health, with marked symptoms, is against tuberculosis.
4. Bear in mind that the lung complications resulting from gas are usually basal and not apical processes.
5. And that the usual signs found are those of a thickened pleura and often a localized bronchitis.
6. And further, that following gas, there is apt to be a marked increase in nervous symptoms of every kind.
7. Do not take it for granted that these men who have been gassed are *not sick* and do not need treatment, even if you decide that they do *not* have tuberculosis or, indeed, not much wrong with their lungs in any way.
8. Treat the *man who has been gassed* and *not* his lungs

THE POST-OPERATIVE TREATMENT OF URINARY LITHIASIS.

BY EDWARD L. YOUNG, JR., M.D., BOSTON.

THE post-operative treatment of urinary lithiasis, aside from the immediate treatment of the damage due to operation, consists of those measures aimed at the prevention of recurrence of the stone or stones. The efficient prophylactic treatment of any condition presupposes an accurate knowledge of the etiologic factors leading up to it. This knowledge we lack about stone formation: in the case of primary stones, we have an almost complete ignorance without, at present, any lead pointing to its solution in the near future; in the case of secondary stones, we are just as much at sea as to the underlying conditions, but have other factors which we understand and can, to a certain extent control. But from the theoretical point of view, there are several things which ought to influence stone formation, and empirically there are certain lines of treatment which have seemed to yield good results. Then, there is the other phase of the question, so often overlooked, which is as important, if not more so, than the one just mentioned, because it is something we can control to a much greater extent, namely, the prevention of stone retention. If all the attention were given to this which I think it warrants, a certain amount of operating on primary stones would be avoided, and a large percentage of recurrent stones would be eliminated without cutting, which now come back on our hands for a second and, ofttimes, more radical and destructive operation.

To emphasize the need of post-operative care, it is worth calling attention to the following figures. Frayer, of London, is reported as saying that recurrence is so frequent after removal of urinary stones that non-surgical treatment is the best policy, unless there are decided symptoms pointing to progressive renal damage. He believes that recurrence is almost inevitable. A much more optimistic view is held by Mayo, who said he thought the percentage of recurrence was not over ten. Braasch got together the figures from the Mayo clinic and found that there was between fourteen and fifteen per cent. of recurrence among the patients from whom they got reports. Cabot and Crabtree reported the cases at the Massachusetts General Hospital and found nearly fifty per cent. of recurrence. The tendency to reformation of stone seems to diminish after forty. Barney reports that about twenty per cent. of the cases of vesical calculus treated at the Massachusetts General Hospital recurred.

Stone formation is a physico chemical problem, but the trouble is that reactions do not always behave in the body as they do in the laboratory. A nucleus is necessary as the starting point for a stone, some bit of organic material being the commonest substance, either a bacterium, a small blood clot, or a bit of fibrin, are the common nuclei. These certainly cannot be eliminated, as a healthy kidney can, and does excrete bacteria from various foci in the body; very slight trauma may result in a little bleeding and a trivial congestion may let fribrinogen through, which then precipitates as fribrin. Colloid material is thought to play a very necessary part and that is present all the time, one of its functions, at least, being to help keep the oxalates in solution. Crystals, likewise, can serve as a nucleus, and they are also often present in the urine, and there is no known way to prevent their formation. In a test tube precipitation, in crystal form, requires saturation and quiet; in the body, we can control neither factor, for, in spite of a large fluid intake, we cannot be sure that at some point, in some tubule, the necessary conditions would not be present. And to expect absolute quiet for any but the shortest periods is, of course, absurd. One or more of these conditions are present in every urine at some time or other, and yet in this part of the world so few persons form stone that they certainly are only incidental. Add to all these, the fact that, once started, a stone can grow even in a dilute urine, and the hopelessness of the problem is at once apparent, at least so far as primary stone formation is concerned. With secondary stones, the problem is a little more hopeful. According to accepted ideas, secondary stones are of the phosphate group formed in an alkaline urine, generally in the presence of infection or residual, or both, and these conditions can, to a certain extent, be controlled by treatment. This is the same unknown underlying cause here, as not all cases having infection and residual form stones; but the importance of these two factors is, nevertheless, so obvious that they do not need discussion. They apply, moreover, to the kidney, as well as to the bladder, and I think this is often overlooked. In this connection, there is one procedure which has been suggested and which has not received the attention, it seems to me, it deserves. Crowell advocates washing out the renal pelvis after pyelotomy, until all evidence of infection has disappeared. Inasmuch as pelvic lavage is a well recognized therapeutic measure in certain cases of pyelitis without stone formation, it sounds more than logical that it should be used in post-operative pyelitis, where the infection may encourage a recurrence of the calculus.

Now, as to the chemical factors involved, which we can control, at least to a certain extent. First, as to dilution of urine: enough water should be taken so that the patient voids at least two quarts per day. It is not enough to give an arbitrary amount as an intake, as the quantity eliminated by other channels may often be enough to make the urine very concentrated, even in the face of a fairly high intake. Another standard is the specific gravity, which the patient can take himself; this should be kept below 1015, assuming the kidneys are normal and there is ordinarily an average specific gravity. Casper considers distilled water very important and Ochsner, in this country, also uses it, but no one else seems to believe that it is necessary, and certainly, for practical purposes, it is almost out of the question. From time immemorial, some drug has been searched for which, when taken by the mouth, will dissolve stone. This drug has never been found. The only two seriously considered are glycerine and piperazine, the first of which Casper uses in tablespoonful doses every night, but more as a universal preventative than solvent: and the second of which, in ten-grain doses, three times a day, has been hoped would dissolve uric acid in the body, as it does in the test tube. There is no real evidence, other than the prejudice in the minds of a few men that either drug is of the slightest value.

According to most textbooks, uric acid, or the urates, form the basis of the majority of renal calculi. Rosenbloom recently reported the analysis of fifty-one kidney stones, and found that all but four were mostly, if not entirely, calcium oxalate. This is of great importance, as the first mentioned (uric acid) is formed in an acid urine and is dissolved by the alkalies, while the second is more readily formed in a weakly acid or alkaline urine, and is dissolved in a strongly acid medium. The first thing to do on removal of a stone is to have an accurate chemical analysis made.

Now, as to details of treatment; first, whatever the chemistry, attention to general condition in this, as in every other morbid state, is essential. All the various channels of elimination should be kept open; moderation in diet, whatever that diet may be, is important; avoidance of alcohol and all but a small amount of tea and coffee must be insisted upon. Above all, we must remember that the patient may have something to say about how far he is going to burden his life with diet or special treatments, and that with everyone there is a point where the bother of various restrictions overweighs, in his mind, the fear of recurrence, and orders will be more or less disregarded. So it is much better for a few rules to be carried out than for many to be disregarded.

If the stone is calcium oxalate, the following chemistry is to be borne in mind: this substance is best held in solution by a strongly acid urine, especially when the acidity is due to the double acid phosphate and in the presence of an increased amount of magnesium, and with the lessened amount of calcium. An attempt to carry out these conditions is not too irksome to the average patient. The following things should be entirely eliminated from the diet, because of the very high content of oxalic acid: rhubarb, spinach, sorrel, strawberries, figs, beetroot, beans, tomatoes, plums and cocoa. Where the tendency to reformation is very great, and consequently the added burden would be welcomed if it helped, the calcium intake can be materially lessened by omitting milk in all forms. Barney told me of one case where it worked wonders in a child with marked tendency toward the formation of calcium oxalate stones. Acid sodium phosphate and magnesium in some form, by mouth, fulfill the other requirements. This is as far as we can go in prophylaxis and, in spite of the most rigid observances of these rules, I have seen stones recur. I have in mind one patient especially, who seems to conform beautifully to all the requirements of health, activity, water drinking, diet, etc., from whom I removed a calcium oxalate stone five years ago. Since that time, he has passed, on the average, two stones a year, sometimes without trouble, occasionally with help from cystoscopy

If the chemist reports a uric acid or urate stone, the following factors are important; uric acid in the urine comes from two sources: first, that of endogenous origin is one of the end products from the breaking down of body tissue, and the amount of this in the urine is entirely uninfluenced by diet; and second, that of exogenous origin, which comes from the callular elements of the proteid of the food. The precipitation of this chemical depends less on the amount present than on the chemical form, and when united with some base is more apt to stay in solution, which, to the chemical mind, is equivalent to saying that it is more soluble in alkaline urine. With these facts in view, the simplest modification of diet would seem to be as follows: meat to be taken sparingly, and the following things to be omitted entirely: liver, kidneys, sweetbreads, brains, fish roe, meat extracts. Salt, also, is to be used sparingly. An abundance of fruit or fruit acids is beneficial. I have already mentioned piperazine: it is harmless, but is just one more thing with which to burden the patient. Beyond this, we cannot go.

These two forms of stone include the vast majority of primary calculi. Cystin, xanthin, and a few others have been reported, but for practical purposes may not be considered.

So far, we have been dealing with recurrence of renal stone as a primary stone. In considering vesical calculus, we are dealing entirely with secondary stone formation. Even when first formed, stones are rarely, if ever, primary in a normal bladder; they may originate in the kidney and get as far as the bladder without further advancing, and in the bladder form the nucleus of a phosphate stone; this may be the reason why there are relatively so few bladder stones in the female, as the female urethra readily passes most concretions which come from the kidneys. Or they may be found around some other foreign body, or may simply arise in a puddle of pus and urine. Even in these cases, there is the same unknown factor of the prime importance, and the majority of bladders with an infected residual do not contain stones.

These secondary phosphate stones are found in alkaline urine and are readily soluble in even weak acids. Accordingly, the most important thing is to make the urine acid. We are taught that an alkaline cystitis was more painful than an acid cystitis and that it was best to change the reaction for the greater comfort of the patient; the implication being that it was easy to change the reaction. If it were as simple, there would be no problem to discuss. The fact is, that in many cases, in a fair percentage, I believe it is impossible to render the urine acid and hold it there for the practical purpose of home treatment. The difficulty lies in the amount of kidney damage which is present, which may make the cause of this alkalinity impossible to cure. This cause is found in the type of infection. Colon bacilli live by preference in an acid urine, but unfortunately it does not long remain the only organism; and the cocci, which sooner or later supervene, cause an alkaline fermentation, and only by eliminating this infection can the reaction be permanently changed. There are several ways of attacking this. Regular bladder wash stands first in importance, and probably does its work by the mechanical process rather than by means of any special drug used. An attempt to replace the cocci by some strain of acid forming bacteria, more vigorous than the cocci and yet not harmful to the host, was advocated by Caulk, and, though not by any means as efficient as it was first hoped, is nevertheless a great help. The Bulgarian or lactic acid bacilli are the ones used. It is easily seen why this is not always successful; when the kidneys are infected, as they generally are, and a constant stream of alkaline infected urine is pouring into the bladder, the acid forming bacteria are overcome by mere weight of numbers. Drugs and diet have also been used to help. The drugs which can be used by mouth are boric acid, sodium benzoate, acid sodium phosphate and hydrochloric acid. The first, boric acid, has only a slight effect and has never been much used. Sodium benzoate increases the hippuric acid in the urine, but is of much less value than acid sodium phosphate. This is another therapeutic agent which was welcomed with great enthusiasm when first advocated a few years ago. In uninfected urine, it will make the urine acid very readily, in doses not over eighty grains a day. If much infection is present, even the maximum dose will not show any change by the time the urine can come in contact with litmus paper, and with large doses the bowels soon become too loose for comfort. Hydrochloric acid, used in dilute form, increases the acidity of the urine in direct proportion to the amount ingested. Clinical experiments have shown that in the average infected prostatic, between one and a half liters per day are necessary to overcome the alkaline fermentation. This is out of the question in routine, long continued home treatment. Antiseptics by mouth are useless, as all but the formalin forming drugs are too weak to have any effect, and these are not split up except in an acid urine. Diet has little actual effect on the reaction in these cases. In general, it may be said that a diet high in proteids tends to an acid urine, and a low proteid diet to an alkaline one. As old men, in whom vesical calculi are most apt to exist, are very prone to a low proteid diet, attention to this detail may help. About a year ago, Patterson worked on this problem at the Massachusetts General Hospital, and even with large doses of HCl and intensive local treatment, was unable to make every urine acid for more than a few hours at a time. To balance against the factor of reaction from food is the fact that a high proteid diet tends to increase the phosphate intake. The question of the amount of phosphate intake and output has not been given the attention I am sure it deserves. The normal daily amount of phosphate in the urine is from 1.5 to 3 grams per day, the average about 2. This amount may be very much increased in certain cases from some obscure metabolic change, so that not only a momentary increase is present, which is relatively common, but a very high daily average is maintained. By omitting milk, eggs and fish, the intake can be materially cut down, and without interfering too much with the diet; and by taking calcium lactate in powder form, in ten grain doses, mixed with food, some of the phosphate in the food is rendered insoluble and goes out with the feces. The most striking example of efficiency of attempted control of phosphate intake was shown in the first case where I used it. A woman of 35 started to form bladder stones shortly after childbirth. She was operated on, but before the bladder wound was closed, she had reformed the stones. Once she had a litholapaxy, but again had stones in her bladder before leaving the hospital. It was at about this time that the injection of lactic acid bacilli was being hailed as an end of all troubles of the kind. So the last attempt was very thorough, and after crushing and washing out the calculi, the bladder was washed twice a day with acetic acid, starting with ½% and working up to 1%. Between times, lactic acid bacilli were injected. Large doses of acid sodium phosphate were used by mouth. In this case, the kidneys were not infected and so, while in the hospital, the patient was kept free of stones. But on returning to the office about ten days afterward, she was as bad as ever. So far, no attention had been paid to phosphate chemistry. An analysis of the urine was next done, by Dr. Denis, who reported a constant twenty-four output of between eight and nine grams. The patient was then put on simple diet, outlined above, and the bladder once more cleared of stones, and this time she remained free of calculi and has been all right ever since. All cases do not respond in this ideal way, but much can be done along the line indicated. Lastly, I want to emphasize what I believe is the most important part of the whole question of post-operative treatment of urinary stones, and that is the prevention of stone retention. Much can be done along this line, enough to justify the statement that the majority of recurrent stones, which cannot be prevented by the means enumerated above, can be helped out without recourse to further surgery. All of the factors so far spoken of are of benefit, not only in preventing formation, but in preventing retention. Abundance of excretion helps to wash along a small concretion, as well as to delay its formation by dilution. Bodily activity is a distinct help in keeping things moving. It is not unusual for activity to be followed by hematuria, or even renal colic, when there is a stone present; and the same disturbance which causes these symptoms may well aid in the passage of a small stone. One patient whom I saw several times a few years ago is a good example. He was an enthusiastic baseball player, and for three or four years, in succession, he started a stone along as soon as he started to play, in the spring, and each time got rid of it without surgery.

Drugs by mouth are of little value. Caspar uses glycerine in tablespoonful doses, both to prevent formation and to aid in the expulsion. Oehsner uses the same drug to help in the passage of a small stone. The details of his plan are as follows: two ounces of glycerine are given every night in a pint of sour lemonade, and then one-half pint of distilled water every hour. Within a week or two, the stone will slip out, in a large majority of cases. Watson and Cunningham advise the use of turpentine, as follows: spirits of turpentine in 10 m. doses, in gelatine capsules, three times a day for not over a week. As this drug is a kidney irritant, any longer use, or larger dose, may cause some nephritis. I have thought once or twice that the use of the new antispasmodic benzyl benzoate in full doses was of benefit, but in most of the cases it seemed to have no effect.

Local treatment is the most important thing aside from abundance of water. Pelvic lavage has already been spoken of. When stones have started down the ureter, the main consideration is that they shall not remain in one place long enough to cause ulceration, and by thus pocketing themselves, be prevented from making further progress. This can generally be prevented and progress aided by occasional manipulation with the ureter catheter. Various things can be accomplished by this; most important of all, the stone is jarred loose from its seat; even pushing it back always is preferable to letting it stay where it was. Three times I have pushed a small stone back into the kidney pelvis when putting in a catheter to confirm the diagnosis, and in all of these cases the stone (in one case, stones) came out later with a little help. If the ureter catheter goes by the calculus various substances have been injected in the hope of aiding progress. Sterile oil and novocaine solution are most often used. Papaverine, one of the alkaloids from opium, which is supposed to relax smooth muscle fibres on local application, has also been used. I have never been able to convince myself that I got any help from any of these three substances. I think the main thing is the direct manipulation. When the stone is within half an inch of the uretic orifice, that opening may be cut through the operating cystoscope, and a stone which has reached that point and stuck, and then increased in size, may occasionally be removed when far beyond the size ordinarily delivered without operation. I have heard it stated that, the monopolar current applied directly to a stone would cause it to disintegrate. If true, that would often help where a large stone is stuck in the bladder wall. I have tried it once, without success.

The ideal routine for any patient after operation is to have x-rays at regular intervals, short at first and gradually lengthening, if no tendency to stone formation is shown, and at the same time regular pelvic lavage until infection is gone. This involves considerable trouble and expense, and many patients either will not or cannot carry it out, but it certainly would avoid later trouble in many, if not most patients.

The routine treatment in case of bladder stones is simpler but even more important. It varies in minor details with different patients, but the essential thing is regular frequent bladder washes. There are few patients who cannot be taught to catheterize themselves, and where they actually cannot do it, there is generally some other member of the family who can. The irrigation itself is the main thing, but in some cases where incrustations readily take place, ½% to 1% acetic acid is valuable in loosening these fragments. Occasionally, if gomenol is left in the bladder after the catheter is withdrawn, it helps irritation very much. If that is not necessary, an ounce of saturated boric acid solution makes a good residual for the bladder. One patient, who is now carrying out this routine, plus calcium lactate by mouth, has now gone longer without stone formation in his bladder than he has gone for eight operations heretofore. (He has recently come to measure time by his litholapaxies, as he has had nine in the last fifteen or twenty years.) Even if a small stone forms under this régime, it can almost always be removed through the operating cystoscope before it gets to the size where litholapaxy is necessary. This routine, if faithfully carried out, will prevent recurrence even where there are factors, such as a diverticulum or persistent residual, which almost inevitably tend to the reformation of stone, and I think recurrent vesical stones ought to be a rarity instead of a common occurrence.

Compared with repeated operations, the above outline is little trouble, and patients tend to get careless as time goes on, but where there is some condition of the bladder just mentioned, it must be urged on the patient that "eternal vigilance is the price of safety."

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A CANCER QUESTION: R. S. V. P.

BY S. W. LITTLE, M.D., ROCHESTER, N. Y.

THE overwhelming weight of the best medical opinion is that, in its beginnings, cancer is a purely local disorder and therefore that cancer may be, can be, and is cured by the early complete removal of the pathological new growth called cancer. The conclusion is inevitable, if the premise is correct.

Medical men are unanimously of the opinion that sooner or later cancer becomes a fatal systemic disease if allowed to run its natural course. The prevailing opinion is that the disease spreads throughout the body from what was at first a purely local and microscopically small beginning. Not that the whole body becomes a cancer, though there may be here or there actual new cancers derived from the original cancer; but that something or other derived in the first instance from the original cancer invades the whole organism and eventually kills it. In other words, it is not the new growth itself which is the fatal disease, but the new growth contains, or generates within itself, the fatal disease which we call cancer. Furthermore, it, the new growth, must include within itself from the very beginning, the essence of the disease, or at least the power to develop the fatal and diffusable essence,—always; because, undisturbed, the fatal disease is always in evidence. We have a name for the picture presented by a patient after his cancer has ceased to be a purely local disorder and has sent throughout his body the death-dealing essence of cancer:—we call it "cachexia," which means "a depraved condition or habit of the body or nutrition," and in the case of cancer, it also means that we do not know exactly how the "cachexia" came about. Obviously, it is unreasonable to hope for a cure (after a cancer patient has developed cachexia) by total removal of one or all the cancers he may have,—the disease is systemic and hopeless.

I have said that the new growth itself is not the fatal thing. Yet, in itself, it sometimes is fatal. It may be located where it may kill mechanically, by pressure upon neighboring tissues: it may ulcerate and destroy the walls of neighboring blood vessels, causing the patient to bleed to death. But such deaths are not, strictly speaking, deaths from the disease, cancer, as such; the same sort of death results as an occasional incident in the course of disorders other than cancer. Any foreign body serves as well as a cancer to kill by mechanical pressure upon a vital organ; one can bleed to death as easily from an ulcerating fibroid as from an ulcerating cancer.

The usual death of a cancer patient is not from the new growth itself but from the fatal thing which medical opinion in general claims is inherent in the new growth, and becomes disseminated throughout the body. The cancer patients dies "cachectic." His cancer may be rather insignificant in size, it may not be ulcering, there may be no other demonstrable "metastatic" cancers in his body; and yet he becomes cachectic and dies. Another patient may have an enormous fatty tumor, or an enormous fibroid growth; but he does not become cachectic, nor does he die, until the natural times comes A woman may have a foul-smelling, ulcerating cancer of the breast; if so, she is also cachectic and soon dies. Another woman may have just as foully-smelling an ulcer of the leg and live out her natural life. A patient of the writer's had a nasty, foul-smelling discharge from a large ulcer of the back, over the sacrum, from 1865 until 1913, but was otherwise in good health. In 1913, a cancer developed at the site of the ulcer. The ulceration and the odor of the discharge therefrom, were neither improved nor made worse, but the patient soon developed "cachexia," and died. At no time was his cancer impressive, by reason of size, position, pain, discomfort, or ulceration; it neither pressed upon any vital structure nor did it bleed. It was impressive because it was a cancer. The condition was discovered by accident in the course of a medical examination for another purpose. The man absolutely declined operation on the ground that he had "lived with it for about 50 years," and that "it wasn't any worse now than it had ever been." I cite this case merely as a good example of the fact that the new growth which we call cancer is not often itself the fatal element in the disease which we also call cancer, though the new growth, however insignificant-looking. is the certain sign that the patient carries in his body the fatal disease. As already stated, the overwhelming weight of medical opinion is to the effect that the new growth itself is, or contains within itself, all there is to the disease called cancer, at the beginning of that disease. Later, all agree that the disease becomes, not a local disorder, but a fatal systemic disorder affecting all tissues in the body. The new growth itself never originates in any but epithelial tissues and, with the possible rare exception of bone, never metastasizes in other tissue nor appears in other tissue except by direct extension of the growth, and yet the disease cancer ultimately affects all body tissues—cachexia. It is very important to bear in mind that the new growth cancer and the disease cancer are not one and the same thing, though, at first, the disease may be inherent only in the new growth, as medical authority claims.

As to just when, in a given case, the disease ceases to be local and becomes systemic, medical authority is silent; but all agree that in the majority of cases it is a matter of but a few months, at the most, after the new growth can be detected. Hence the urgency of the earliest possible removal of a cancer, if we are to "cure" cancer.

Such, in brief, is the position of medical authority in the matter of cancer, and such has been its position for at least thirty years. Medical practice based upon this position shows results of the reverse of encouraging. It would appear indeed, that the more we remove cancers and the earlier we remove them, the greater the cancer death rate (see, for example, BOSTON MEDICAL AND SURGICAL JOURNAL, March 13, 1919). The medical profession well knows how matters stand but, undaunted and with honest altruism, keeps doggedly at it. Failure is explained by two undoubted facts: patients, through ignorance or fear, do not go to physicians early enough; very many well-meaning physicians temporize when patients with suspicious "lumps" do consult them. As a result, the average cancer patient comes to the surgeon months after his cancer has become more than a removable local condition.

For the past eight or ten years, the leaders of the medical profession have been making a systematic concerted effort to educate their fellow-practitioners and the public, so that there will be far less delay between the beginning of a cancer and the beginning of an operation for its removal. Time and money are freely given to this end and much is hoped for this intensive educational effort. The greatest single agency at work is the American Society for the Control of Cancer, which has accomplished very notable things already,—not in controlling cancer, but in obtaining and disseminating important facts concerning cancer, with the ultimate end in view of actually controlling the scourge. The writer, though a member of this Society and feeling honored thereby, does not agree to all the official statements put forth by the Society, and it should be clearly understood that he is writing as an individual and expressing his individual opinions in this paper whether or not they agree with the official opinions or the Society.

What are the reasons for believing that in the beginning cancer is a local disorder, curable by total removal of the pathological new growth called cancer? I honestly ask this question in order, as the French say, "to know," because I do not know. The reasons which I have been able to secure thus far seem to me altogether unconvincing, and there are but two which call for any comment: First, the earlier we operate, the more cases we cure; second, at first there is but one known and invariable manifestation of the disease anywhere in the body,—the new growth itself. (The second reason, of course, was the original reason for operating at all; at the present time, one is apt to get the reasons in the order stated.) There is a "reason" which, I suspect, is the real one, though I cannot be sure, because it is never mentioned, being so absurd that one would naturally decline to give it as his reason,—"I was taught to believe it in the Medical School and have persisted unthinkingly in the belief, because it has been the teaching and belief of practically all medical leaders from that time to the present." The presumption is strong that the leaders have some good reason for their belief, and to that extent the profession at large is justified in following the leader; but if the leaders have no satisfactory reason or do not choose to divulge it, one is equally justified in not following the leader; and he is lacking in self-respect if he follows when he has what seem to him most excellent reasons for not following, particularly when his own argument remains unrefuted. Medical authority is, in general, honest, worthy, altruistic, and tenacious of a long-unchallenged dictum. Medical authority is apt to be right, but is occasionally wrong. Even when wrong, it has been known to teach and defend the wrong until forced by circumstances (not by logic) to reverse its position. Smallpox and yellow fever will serve as instances of this last statement. Nevertheless, as stated, the presumption is that in medical matters the position taken by an overwhelming majority of medical leaders is apt to be the correct position. In all sincerity, I ask what reason there is for believing that, in its beginning, cancer is a purely local disease, curable by the total removal of the incipient pathological new growth known as cancer.

"The earlier we operate, the more cases we cure." The assumption is that if we could only operate early enough and on enough cases, we should have control of the cancer situation and bring the cancer death rate to a point where we could view it with some pride. Whether upon this slender ground or upon some sure ground known only to itself, medical authority states as a fact what has just been called an assumption. The American Society for the Control of Cancer, in one of its official publications, says: "Cancer—always starts as a local growth. Hence it can always be cured by removal, if discovered and treated early enough.' (The "treatment" being, of course, removal of the local growth.) Simply the bald statement, "Cancer always starts as a local growth." If this read, "A cancer, etc.," it would be manifestly true, though slightly platitudinous, as though one should solemnly announce that "a tree always starts as a local growth." But plainly, this authority agrees with the others in the belief that Cancer and *a* cancer are always, somehow, wrapped up together in the same small package for a short, but unknown, time. "Hence it (cancer) can always be cured by removal (of the local growth), if discovered and treated early enough." From this, it follows that medical authority, while frankly admitting ignorance of the cause of cancer, knows where it may always be found, namely, in a beginning cancer; and knows that it cannot be found anywhere else in the body at this stage of the disease. Otherwise, it could not be stated as a fact that sufficiently early removal of the pathological new growth would always cure cancer, for it would be absurd to claim a cure if the unknown cause of the new growth were not removed with it. The obvious place, then, to seek the cause of cancer is where it is always present,—in a beginning cancer; that is, if one believes that complete early removal of a cancer always cures cancer. No one claims that complete removal of a corn cures anything save the discomfort caused by that particular corn, because removal of the corn does not remove the cause of the corn. But medical authority says that early removal of cancer *cures* cancer always, if the removal is done completely and sufficiently early. How rarely we succeed in complete and sufficiently early removal!

It should be understood, furthermore, that the word "cure" as applied by medical men to cancer, has a unique and variable meaning. It does not mean now what it did some years ago, and it may change again in a few years. At present, a patient is officially "cured" of cancer if, for five years continuously, after having had his cancerous growth removed, he lives without the appearance anywhere in his body of another cancerous growth detectable by medical men. Some years ago, the time limit was three years. The rule applies alike to all cases of cancer, both to those "cured" of the purely localized disease and to those "cured" of the systemic disease. There certainly are more such cures the earlier in the disease the cure is attempted and the chance of cure rapidly lessens, the later in the course of the disease it is attempted. Except in a few instances, the chance of a cure is *nil* after the disease has been in progress for, say, a year.

The fact of more such cures from early than from late operation is, of course, no proof of a purely local nature of cancer in its early stages. It might just as well serve as proof that cancer is always a systemic disease by saying that early removal of a cancer is less likely to be followed by the appearance of another cancer within five years than late removal, because the systemic disease which caused the cancer to appear is at first not well enough established to produce another cancer easily or quickly, while later, when the disease is well established, another cancer can be easily and quickly produced. The one argument is as good as the other.

But how early must one remove a cancer in order to be able to assure the patient that even this five-year cure is certain? There must be some early period when such assurance can be given if cancer is "always at first a local disease." Up to date, no honest surgeon has been able to operate on a cancer patient early enough to be able to say to him, "You are cured of cancer." Yet, every surgeon with much experience has certainly removed *in toto* very small cancers within a few weeks of their reaching a size large enough to be seen, or even before they are visable as cancers without the aid of a microscope. Reference is made to skin cancers, which are frequently detected and removed at a very early period; and to insignificant looking little spots which, excised as "precancerous," prove, when examined microscopically, to be actually cancers at a very early stage. Even in such a case, it would be a rash surgeon who would say to his patient, "You are cured of cancer"; or "you will not have another cancer for at least five years." In the first place, the surgeon could not be sure that somewhere out of sight there was not already, at the time of operation, a beginning cancer other than the one removed; in the second place, and more to the point, such minute cancers have been thus promptly removed and followed soon by the appearance of another cancer in the immediate neighborhood. The writer has had just that experience. The customary official explanation of such an occurrence is that the original cancer was not completely removed. In the writer's case, if he did not completely remove that cancer, he never completely removed any cancer, nor could he ever completely remove any cancer. Yet a few (very few) of his attempts at total removal of cancers have been followed by official cures; one, cancer of the uterus (microscopic diagnosis) is still alive and cancerless, after 20 years. How early must one remove a cancer in order to say to his patient, "You are cured of cancer"? What prospect is there of ever removing a cancer early enough to say that? I am not here opposing the early removal of cancers; far from it! I am opposing the argument that, because early removal gives better results than later removal, cancer is at first a purely local disease. It does not follow. Also, incidentally, I do not approve the idea of educating the public to believe that "cancer always starts as a local growth," and that cancer "can always be cured by removal, if discovered and treated early enough." The one statement I consider unproyen, and the other misleading, even granting it to be true, because the natural inference is that cancer *can* be discovered and treated early enough to effect a cure, whereas no surgeon, so far as I know, is willing to guarantee a cure, no matter how early he makes the removal. Nor does any man know at what time a given case of cancer, granting that at first it is a local disease, may become a systemic disease. I strongly object to the teaching of partial truths; or of the whole truth in such a way as inevitably to give wrong impressions. It is particularly risky when the teaching is forced upon the public and when the subject is a medical one. If, and when, the pupil finds out that he has received such teaching, he forever thereafter loses confidence in the teacher.

"At first, there is but one known and invariable manifestation of the disease anywhere in the body,—the new growth itself." That is no reason for claiming that the new growth is itself, at first, all there is to the disease. It may be, but the above quotation is no proof of it. If it were competent proof, then it would have been logical a few years ago to claim that, at first, syphilis is a purely local disease, surely curable by the prompt and complete removal of the chancre. (That logic has, in the past, been put into practice as regards syphilis, and, on the five-year basis, would at any time past or present, compare favorably with cancer in "cures".) Assuming it to be possible, would anyone claim that early removal of the sclerotic parts of the arteries would cure arteriosclerosis, on the ground that at first the disease is localized in the sclerotic tissue thus removed?

The truth of the matter is that we have been and are putting too great a burden upon the pathologists. When we say that at first the new growth is all there is to cancer, we mean that it is the only evidence which will satisfy the pathologist that cancer is present, and early in the disease it is the sole constant pathological condition of any kind which the pathologist has ever been able to demonstrate. It is barely possible that there are, from the very beginning, some constant pathological conditions, aside from the new growth, which the pathologists have not yet found. It is not beyond possibility that such exist before the new growth appears and are essential to its appearance! Is it inconceivable that the disease, cancer, begins before there is a cancer? Arteriosclerosis begins long before the arteries are demonstrably "hardened." Certain common types of Bright's disease begin long before we can demonstrate pathological changes in the kidneys. Moreover, pathological body tissue is never a disease; it is a sign or indication that there has been some abnormal happening antedating and causing the tissue to become what we call pathological. All agree that there must be some such happening antedating and causing the pathological tissue growth called cancer, or, more correctly, a cancer. Pathological tissue cannot be at once cause and effect; nor can it be at the same time a disease, all the symptoms thereof, and all the pathological changes induced thereby. Yet, at the start, cancer, the disease, and cancer, the pathological new growth, are one and the same thing; or at least, the new growth, while not itself the disease, contains within itself all there is of the disease; because "early removal (of the new growth) cures the disease." No disease is cured by removal of the disease, unless the whole disease is removed. Therefore,if total early removal of a cancer cures cancer, the meaning can be no less than this: at the first, a cancer is or contains within itself all of the disease known as cancer.

In medical matters we properly accept as true what the laboratory workers demonstrate to be true; but we have a bad habit of declining to accept as true anything which the laboratory men cannot demonstrate to be true and which they have not, or cannot, or will not, demonstrate to be false. Scientific medicine seems to forget that there are competent ways of proving a truth other than the laboratory way, and is actually, at times, color-blind to any light other than than that coming from the laboratory. Even when the truth has been demonstrated, scientific medicine is apt to remain, not only blind, but deaf and dumb, unless and until the truth is demonstrated in the laboratory way. In at least one modern instance, we medical men, besides being deaf, dumb and blind, were incredibly stupid and obstinate. We declined to accept as proven a thing which for twenty years had been a beautifully demonstrated truth, merely because it had not been demonstrated in our own particular way and because it was against the "overwhelming weight of medical authority." We declined to accept, as proven, this truth, even when our own position had been proven wrong by medical authority itself. Before accepting this truth, we insisted upon proving it in our own way. We did so prove it, incidentally killing Dr. Lazear in the process. But we proved it, and now medical authority sanctions the swatting of a certain kind of mosquito, and agrees that "the female of the species is more deadly than the male!" Is stupidtiy too strong a word? "Sanitation in Panama," by General Gorgas, is delightful reading, and its author was a big enough man to appreciate the situation, to acknowledge freely that he had been utterly wrong, and to give credit where credit had been long overdue,—to Dr. Carlos Finlay. For more than twenty years, Dr. Finlay had struggled in vain to induce medical authority to accept as true the conclusion of a perfect bit of logic. Yet not long ago I was curtly informed by a very distinguished pathologist and laboratory worker of international reputation that, "you can't prove these things by logic." I accept, confidently, the laboratory findings of this pathologist as I accept the findings of equally qualified experts in other fields; but I accept the conclusion of a perfect syllogism with more confidence than I accept the findings of any expert. We are putting too great a burden upon the pathologists.

The medical authority just referred to (and he is rightly esteemed as an authority) tells me that "the facts at my disposal point to the conclusion that cancer is at first a local disease." This quotation taken with the one given above (in full: "You can't prove these things by logic, you must have facts of observation") show well enough the mental attitude of modern scientific medicine. The same attitude is shown in a very recent letter to me from an officer of the American Society for the Control of Cancer: "Until we find something that is definitely better (than surgical removal) and proven so by *exact statistics running over a period of years*, we must continue, etc." (italics mine). That is, it will not serve to prove that surgical methods are futile, nor will it serve to prove in any other way than by actual physical demonstration over a period of years that another method is better. How, may I ask, is such a demonstration ever to be made in the face of opposition by the overwhelming weight of medical authority? This very Society urges, among other things, the avoidance of trying to cure cancer by any other method than the one advocated by medical authority. Particularly is the public warned against trying other methods. The particular facts which alone will serve are made difficult to obtain by the very people who are most anxious to get them and are honestly trying to learn the whole truth! "You can't prove these things by logic, you must have facts of observation," but the desired facts must be of a particular kind. Facts proving, or tending to prove, that medical authority is wrong have little or no effect, though facts proving, or tending to prove, medical authority right are counted as worthy; in order to prove medical authority to be in the wrong, one must present "facts of observation" "running over a series of years," which prove, not that medical authority is wrong, but that something else is right, facts which medical authority makes it very difficult to secure. Moreover, medical authority simply ignores even the sort of facts it demands, unless and until they are numerically impressive. Before abandoning the belief that cancer is at the start always a local disease, medical authority demands that the results of treatment based upon the belief that cancer is not, at the start, always a local disease, be produced and that these results be numerically impressive and that they be *better* than present results! "Until we find something that is definitely better, and proven so by statistics running over a series of years, we must continue" (in our present way).

The facts at the writer's disposal point to the conclusion that cancer is never at any time a local disease. None of his published articles on this matter have been refuted, either publicly or in personal communications. The nearest approach to refutation has been simply the assertion, "You are wrong," without saying why or where; and this much only twice. Naturally I am not convinced, though I am so open to conviction that, in this paper, I have changed my tactics. Instead of setting forth the argument in favor of believing cancer to be always a constitutional disease, I choose to attack the position of those who believe cancer to be, at the start, always a local disease, in the hope of bringing forth whatever reason there may be for the belief. The village militia on parade does not inspire the regular army to come and look; but if the village militia attacks the regular army; the army, if only for its own comfort, details a few men to put an end to the annoyance, provided the army has any ammunition.

This is no personal matter. It is a matter of the utmost importance and is fundamental. If cancer is never a local disease, the sooner that fact is appreciated the better; medical authority states flatly that cancer is always a local disease at the start. On what grounds does that statement rest?

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After writing this article, I discovered that I had made a great blunder—maybe. And in the very first sentence, too. In the matter of the constitutionality of cancer, I thought I knew exactly where medical authority stood—still! I meekly acknowledge that I do not know, nor am I sure whether medical authority knows.

In preparing this article I had glanced over the official literature of the American Society for the control of Cancer as one skims through an old, oft-read novel. Later, I read this literature through carefully. If I have blundered, the following quotations from said literature do not excuse the blunder, but they do justify me in saying that now I do not know where medical authority stands in this matter. I quote at random from many similar passages:

"Cancer at First a Local Disease." (Heading to a section.)

"Cancer is not a constitutional disease." (No qualification.)

"Cancer is curable because it is at first a local disease, and not a constitutional or blood disease."

"—— the extension of the disease by secondary growths in other parts of the body leads to the common but erroneous belief that cancer is a constitutional or blood disease"; and in the next sentence,

"It is apparent that cancer when it first begins is a *purely local growth.*"

"Cancer is not a blood disease," but always starts as a local growth. Hence it can always be cured by removal if discovered and treated early enough." (Glorious news!)

"If neglected, the disease may spread *through the body* until it is incurable." (Italics mine.)

"By skilled treatment of these precancerous lesions, it is possible to prevent the beginning of cancer."

"Physicians cannot, by any means, control the incidence of cancer." (Slight discrepancy with preceding.)

There are many other similar statements. Nowhere can I find an unequivocal statement to the effect that cancer, from beginning to end, is never a constitutional disease, but is always confined to the pathological new growth, whether that new growth is localized in one spot or in several spots in various parts of the body. It is true that the flat statement, "Cancer is not a constitutional disease," often appears, but usually followed by a statement to the effect that, "Cancer, being *at first*, a purely local disease, etc." And throughout, tremendous emphasis is placed upon the curability of cancer because, "*at first*," the disease is localized in the new growth itself. This seems superfluous if cancer is never at any stage a constitutional disease, but is always localized in the new growth. In that case, one would naturally urge early operation, not because *then* the disease is not constitutional, but because then, and then only, is the disease localized in a very small and often removable part of the body. It does not need an acute intellect to appreciate that cancer is, *at first*, not a constitutional disease, if one knows that cancer is never, at any stage, a constitutional disease.

I do not know where medical authority stands in the matter, except that it is perfectly clear that medical authority states as a fact, "At first, the disease is not a constitutional disease, but is a purely local growth," or words to that effect. Therefore, my question is pertinent, blunder or no blunder. I would ask a really difficult question if I could catch medical authority stating as a fact, without offering convincing evidence of its being a fact, "Cancer is never, from beginning to end, a constitutional disease, but is always localized in the pathological new growth called cancer, whether that new growth be small or large, single or multiple, confined to one part of the body or scattered here and there in various parts of the body. The disease, cancer, does not exist anywhere in the body outside the pathological new growth known as cancer."

SYMPTOMS AND TREATMENT OF ACUTE CARDIAC FAILURE. REPORT OF A CASE.*

BY THOMAS J. O'BRIEN, M.D., BOSTON.

[From Heart Service of the Boston City Hospital.]

As physicians, we are vitally interested in the true condition of the heart of each patient, and its status, whether normal or abnormal, influences our diagnosis, prognosis and treatment, especially in fields of surgery, obstetrics and medicine.

Our ideas of heart failure, whether gradual or sudden; of valvular defects; of "over-load, etc., have changed completely in the past few years, and the recognition of the exact impairment, be it in nerve, muscle or valve tissue, or, in abnormality in constituents of the blood, calls for new clinical methods, application of new principles, and practical knowledge of the new instruments of precision. Perhaps the contrast between the present method of teaching cardiac conditions, and that of fifteen or twenty years ago, may serve to emphasize the point, which shows that now we pass final judgment upon the efficiency of the whole heart, and entire circulatory system, rather than upon the correctness, or existence of murmur which was formerly accepted as a final diagnosis.

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* Read before a meeting of the Faculty and students of Boston University School of Medicine, at Evans Memorial Hall, January 12, 1921.

Thomas Lewis has emphasized the importance of a well taken history, so that every practitioner knows the true significance of symptoms of breathlessness; of precordial pain; palpitation; syncope, cyanosis and oedema. Greene goes farther and shows that circulatory debility is often wrongly branded, as "neurasthenia"; "indigestion"; "rheumatism"; "malaria"; or "intestinal fermentation," and urges recognition and correction of cause, namely, cardiac exhaustion, as a means of clearing up the troublesome symptoms. The recent physical examination of the youth of our country, however, has shown the frequency of haemic, and cardiorespiratory murmurs, which are always systolic in time, are unattended by cardiac hypertrophy, and the second pulmonic sound is not accentuated. In other words, they play little, if any part in ill-health. Goodman tells us that adiastolic murmur, wherever heard, indicates damage, and although this statement may be questioned, it is nevertheless true, that diastolic murmurs are rarely, if ever, heard in healthy hearts.

A thrill is a vibratory sensation perceived by contact of hand, when placed over the heart or blood-vessels, and is due to some alteration of flow of blood through these organs. A diastolic thrill is never functional, and it suggests either mitral stenosis, or, aortic regurgitation, and the location and character of the accompanying murmur, the presence or absence of Corrigan's and capillary pulse, etc., point to diagnosis.

Mackenzie agrees perfectly with these theories, and says, "What is essential to us, as physicians, is to recognize that a systolic murmur, whether variable or persistent, may be of no significance as far as future of patient is concerned, and that when it is the only abnormal sign present, and the response to effort is good, implies neither cardiac disease nor cardiac impairment."

A murmur, therefore, has diagnostic, but not prognostic significance, and we must decide whether or not the myocardium is badly diseased, as it seems to be an accepted fact, even by pathologists, that the myocardium is damaged by every persistent valvular lesion. Accepting these facts, our attention and treatment must be devoted to the extent of muscle disability, rather than to valve defect. Christian reports that text-books of pathology fail to give any definite satisfactory description of chronic myocarditis, and explains this, by saying that probably the heart muscles and coronary system often fail to present any lesion that the pathologist can describe in objective terms.

This emphasizes the importance of a thorough physical examination, and in a heart examination, especially if a mitral lesion is suspected, and the murmur not in evidence, there are several practical methods of accentuating it. Having the patient take several successive deep breaths, and then holding breath, often brings out the murmur nicely; if a patient is physically fit, extending arms at length, above head, lowering them, and performing this exercise several times with great rapidity; and if a bed-patient, sitting upright, and bending forward and backward several times will often bring out an obscure presystolic murmur.

Hopping, or better still, stair-climbing, is the best form of exercise, to test heart's action, and should be done, when possible, especially in ambulatory patients.

Stengel calls attention to three important factors controlling cardiac circulation, and classifies them as, first, power of the heart; second, proper elasticity and caliber of vessels; and third, efficiency of vaso-motor mechanism. Anything which puts too much strain on these, factors, necessarily interferes with normal functions of the heart, and causes decompensation, especially in a diseased organ. Interference with circulation, as overfeeding, thus increasing viscosity of the blood, may bring about a sudden overloading of an already damaged heart. It is not the valvular lesion, but the myocardial one, which is the real cause of every case of decompensation, and a myocardial lesion, however slight, must be considered as clinically present, with every valvular one. We must remember that every heart has a reserve power, that is, a power which every normal heart, or one not badly diseased, possesses beyond its ordinary needs, and is available for emergencies. When this reserve power has been exhausted, we get a condition known as "failing compensation." Given a lesion (not a syphilitic one, which is rapidly progressive), with a hypertrophied heart, say the result of a rheumatic infection, and after the acute symptoms are over, we are presented with the problem of treating an individual having a scarred valve, or a calcareous deposit on the valve of the heart, plus a lowered reserve power. If that individual lives within his limit, or tolerance for exertion, he will be a well man, practically, but any violation of this rule, and we have an invalid.

All cardiac and cadio-renal patients must be taught to avoid indigestion, constipation, anger, or excitement, and, particularly, over-exertion.

We are too often confronted with emergencies of a complex nature, wherein one condition calls for an immediate operation, or delivery, and a second one contra-indicates such a load on a damaged heart. Unless correct and immediate decision is made, one, and possibly two, lives are placed in jeopardy. If patient is conscious, we have his, or her, physical anguish and fear, added to symptoms, and the result is a picture long remembered. As conditions become aggravated, we soon have a succession of serious symptoms, as a cold perspiration collecting over the body; a lowering of temperature; rapid respiration; increase of rate, and irregularity of pulse; air-hunger; cyanosis; dyspnoea, with grunting expiration; often blood streaked sputum; the typical so-called "myocardial syndrome."

Beardsley advocates the early recognition of such lesions, thereby preventing attacks of sudden heart failure, and advises a careful, systematic, physical examination, and the use of all modern appliances, after the convalescence from acute infectious diseases, such as arthritis, chorea, typhoid, pneumonia, syphilis, gonorrhoea, and influenza. Tonsils, adenoids, sinus involvement, alveolar abscesses, seminal vesicles, pus tubes, empyemata, hemorrhoids, appendices and gall-stones, are to be thought of, and thoroughly investigated, as possible focus, or foci.

A comprehensive explanation of what causes acute heart failure, how to be prepared for it, and just what treatment to follow, is a difficult problem, as yet unanswered. Babcock says that mitral stenosis offers a less favorable outlook than aortic or mitral regurgitation, and that a patient capable of exercise, without dyspnoea or distress, would be a fair surgical or obstetrical risk, even in a case of mitral stenosis. Amount of physical effort is limited, however, and this lesion is not one upon which reliance can be made. Aortic lesions in youth and middle life strongly suggest syphilitic conditions.

Mackenzie explains the most frequent cause of heart failure, as due to inception of a new rhythm. In auricular fibrillation and flutter, the rate of ventricles may be so rapid, and output of blood may be so reduced, that an insufficient quantity of blood is sent to the brain, resulting in syncope, or even death.

Lewis groups the causes of acute heart failure into three main categories: first, sudden and prolonged cessation of the whole heart beat; second, relatively abrupt and prolonged slowing of heart, accompanied by lowering of blood pressure; third, phasic variation of pulse-rate.

Willius, of the Mayo Clinic, has investigated a long series of cases, and reports his pathological findings, showing that the myocardium may be diseased by infection through vascular channels, numbering 50%; degenerative processes, numbering 40%; and local nutritional, numbering 10%, and sclerotic or obliterative processes are causes of the latter. Prognosis is grave. Disease is progressive, and duration is comparatively short.

Dilatation of the heart is a common diagnosis, but is a misnomer. Starling has shown that every healthy heart dilates, when put to maximum capacity. This indicates that a tired heart must dilate, in order to carry on the same work, as a fresh, untired heart.

Thomas Lewis admits his inability to correctly differentiate between a hypertrophy and a dilatation, in the living and persistently enlarged heart, and he teaches that the two conditions are co-existent A diagnosis of "enlarged heart," being preferable to one naming either of the conditions, as both probably are present.

LeCount reports details of sixty cases of sudden death from angina pectoris, and shows by post mortems, that the myocardium, as well as the circulatory system, was diseased in each case. Syphilis is a frequent offender, as a cause of heart disease, and is often overlooked, so a Wassermann test is clearly indicated, as a routine measure, in all heart cases. That this may be given emphasis, I would like to quote the records of the Memphis General Hospital, as analyzed by Fontaine, showing that 28.8% of mitral cases, 45.8% of all aortic, and 61.1% of all aneurysms are due to syphilis.

Kahn has done much on the arrhythmias, in a practical way, and he says that persistent tachycardia does not permit the proper filling of the ventricles, and points out that these are the important chambers of the heart, as is demonstrated by condition of auricular fibrillation, wherein the auricles are quite worthless, and yet the patient continues to live. To differentiate a simple from a persistent tachycardia, the method of Benjamin and Brooks is of clinical value. The pulses, both radial and apical, are taken, and then the patient drops head forward and bends the body to about 45°, whereupon the rapid heart will retard to a remarkable degree, very quickly, if it is a simple tachycardia, while a persistent one will not be affected.

Mendelsohn asserts that the greater the amount of work done, with prompt return to normal rate, the greater is the functional capacity of the heart. This suggests an easy method of testing capacity of heart muscle, by counting the pulse-rate, while patient is standing, and then, when in a recumbent position.

Normally, according to Cabot and Bruce, there is a lessening of 7 to 15 beats per minute, and when patient assumes a standing, from a reclining position, there should never be an increase of more than 20 beats.

Several observers have advocated the use of the blood-pressure apparatus, as a means of checking up by arithmetical precision, the capacity of the heart, as a pump, and Gibson offers the following formula as dependable:

$$\text{Diastolic} : \text{systolic} = 2 : 3$$

$$\text{Pulse-pressure} : \text{systolic} = 1 : 3$$

Tigerstedt has perfected a formula for same purpose

$$\text{Pulse-pressure} \times \text{pulse-rate} = \text{velocity}$$

$$\text{Systolic pressure} \times \text{pulse-rate} = \text{work}$$

$$\frac{\text{Pulse pressure}}{\text{Systolic pressure}} = \text{efficiency of heart as a pump}$$

Systolic =130
Diastolic=110

$$\frac{\text{Pulse pressure } 20}{\text{Systolic pressure } 130} = 15\% \text{ (normal being about } 35\ \%)$$

Stone claims that the diastolic pressure measures the peripheral resistance, and is a better index of hypertension than the systolic. A diastolic pressure of 100 or 110 signifies hypertension.

Peabody and Wentworth have done much on the estimation of vital capacity of the lungs, and point to value of this method in distinguishing between true cardiac weakness, and a cardiac neurosis, that may stimulate organic heart disease.

An individual having a vital capacity of 90%, was found to have no dyspnoea. Cardiac patients, with a vital capacity ranging from 70% to 90%, were found to have no dyspnoea, but these patients must accustom themselves to live a limited life, as regards physical exertion. Patients with 40% to 70% are more restricted, can do no work, and have dyspnoea on the slightest exertion. Below 40%, we find acutely decompensated patients, usually bed-ridden. The use of a spirometer in a questionable case, for instance, one about to be subjected to a serious operation, to be delivered, or, at onset of a serious illness, would be of great value.

Among the recent advances made in study of the heart muscle, is the perfection of the polygraph and electrocardiograph, and the interpretations of the tracings. This method does not assist much in diagnosis of valvular lesions, and the well taken history, with thorough physical examination, still occupies the first place in importance, but this added information shows in terms of definite value, the status of the cardiac muscle, and the kind of work it is doing. Many new words and terms are used to express conditions, with descriptive accuracy, and as our differential diagnosis of the several arrhythmias, is wholly due to these instruments, and as treatment depends upon diagnosis, we are greatly helped by them.

The electrocardiograph, particularly, adds one more method for the final estimation of a heart condition, and while of great value in distinguishing and recognizing arrhythmias, is of value in checking up the apparently normal and regular heart, which often reveals unsuspected weakness in heart muscle, as recently pointed out by White. It is interesting to note, that the medical profession is becoming interested in electrocardiograms, and without doubt, they will be as well read and as necessary for complete examination, as x-ray plates.

The trustees of the Boston City Hospital have recently installed an electrocardiograph; have had wards wired, so that patients can have tracings made, without being removed from their beds; and the medical staff has assigned some of its members for the study of all heart cases, both in Out-Patient Department, and in wards of hospital. With the assistance of the members of the Social Service, we are endeavoring to help our discharged cardiac cases to get employment, suitable for their particular needs; to see that cases return for examination, or visit their own physicians at stated intervals; and to teach them to live within their limits of physical exertion.

The x-ray plate gives us valuable information in all cardiac cases, and adds one more method of checking up our findings of size, shape, position, and, possibly, the presence of a complication, as an aneurysm.

Treatment varies with particular conditions, and some hearts fail so quickly that no treatment can be given. I refer particularly to lesions diagnosed post mortem, as embolic plugging of pulmonary artery; and impaction of ball thrombus in a narrowed mitral orifice; in a rupture of heart wall; in rupture of an aneurysm; complete heart-block; convulsion in Stokes-Adams Disease; and, in auricular fibrillation. In passing, I would say that the deaths by chloroform and electrocution, are proven to be due to ventricular fibrillation.

Accepting the fact that "over-load" is cause of attack, in most cases, all treatment must be based upon common sense, and removal of physical and mental strain, is the first logical thing to do.

Rest is of greatest importance, and should be mentioned first, and be insisted upon. The plans and wishes of patient must be disregarded, and, if symptoms are at all severe, absolute rest in bed is necessary. Failure to get satisfactory results, is usually due to mismanagement of a case, rather than error in selection of drug. Much of the praise and faith bestowed upon digitalis and allied drugs, might well be given to thorough rest. While patient should be permitted to assume that position, which gives most comfort in bed, a semi-prone position, or even an upright one, is advisable, and use of a bed-rest should be insisted upon, to give greater comfort, and thus avoid the physical strain of frequently readjusting the pillows.

Diet, baths, graded exercises, etc., are most important in the convalescent stage, and call for careful supervision on the part of the attending physician.

Drug treatment involves the personal equation, and one cannot be exact, as to dosage, selection of drug, etc., on this account. The correct diagnosis and particular situation as regards sex, age, size, complications, etc., must be considered in each case.

Venesection is clearly indicated, when patient is greatly cyanosed, dyspnoeic, coughing and raising bloody sputum. There is absolutely no danger in drawing off blood at this stage, and wonderful results often follow, as drugs certainly are made more active thereby.

Morphine, best combined with atropine, to relieve muscular spasm and also to prevent the depression which so often follows use of opiates, is indicated in good-sized doses in angina, and similar conditions, to relieve pain, and to quiet the frightened patient.

Aseptic ergot has been strongly recommended for subcutaneous use as a substitute for digitalis, for heart-failure, but should not be used as an emergency measure.

Camphor-in-oil, also given subcutaneously, has been a favorite in the last few years, for emergency stimulation, and while it has some value, is not worthy of the confidence bestowed upon it, and ranks far below some other drugs in practical use.

Adrenalin is fleeting in action, and not dependable, and the same statement might be repeated for pituitary extract, as emergency measures.

Alcohol, while popular, is not a true circulatory stimulant, and the great faith in its ability to do the impossible, as held by the laymen, is not shared by the medical profession.

Aromatic spirits of ammonia has fleeting action, is a mild stimulant, possesses irritating qualities, may have some virtue in a simple faint, but certainly does not qualify as a heart stimulant for emergency work .

Strychnine is popular, but undeservedly so, as it fails to produce results in acute cardiac failure.

Amyl nitrate, nitrites of sodium, nitroglycerine, etc., are also fleeting in character, have a distinct value in angina pectoris, but are valueless otherwise.

Caffeine has some vasodilator properties, but acts more as a diuretic, and is not an emergency measure.

Cactus grandiflora, squill and sparteine sulphate have value, and when well chosen for selected cases, as for patients having idiosyncrasies for digitalis or strophanthus, or, when the cumulative effect of digitalis appears, and it becomes advisable to discontinue it for a while, cactus or sparteine are very dependable.

Thyroid extract has been known to help heart-block, by giving sufficient amount to produce a tachycardia. This may work all right from a theoretical point of view, but not enough cases have been reported to justify an opinion, as to the real value of this method.

Convalaria majalis (lily of the valley); adonis vernalis; apocynum cannabinum (Canadian hemp), have value as heart stimulants, but, like others mentioned, are not drugs for emergency, in acute heart failure.

Digitalis, first recommended by William Withering in 1775, is one of the most dependable and widely used drugs in medicine today, but acts too slowly for emergency use. It best serves its purpose, in cases of failing compensation, and if used in acute cases, it should be restricted to those wherein immediate results are not necessary.

Edwards has written some very excellent articles on digitalis, and he explains the action of this drug as influencing heart muscle, vagus nerve, vasomotors and muscles of blood vessels, thus aiding heart to elicit and coordinate all its latent power, but not increasing the absolute power of the heart. This means the increasing of tonicity, rhythmicity, and contractility of the heart, while lessening excitability and conductivity.

Much depends upon the particular preparation of digitalis, and more upon the manner in which it is used, as, at best, it is an unstable drug, deteriorating with more or less rapidity. For oral administration, the leaves are most active and dependable, in that they contain all the glucosides, and, because they deteriorate least rapidly; the official tincture ranks second, losing about 40% in from seven to fourteen months, according to Schmidt and Heyl, and the infusion loses 20%, or more, in five days, the presence of alcohol not stabilizing the preparation, although it does prevent fermentation and "souring."

It should be remembered, that digitalis does not do its maximum work for seven hours after being administered, irrespective of amount given, so we give it, at least, every six hours, to get a continuous action. Tincture of digitalis should not be given subcutaneously, as it is very slowly absorbed (if at all), has tendency to irritate surrounding tissues, and form an abscess. Most of the patented preparations of digitalis for subcutaneous injection, are made from the glucosides, omitting digitonin, which has no value as a heart stimulant. Solutions of, and combinations containing digitoxin (dose, 1/400th of a grain) are the most efficacious, and are indicated when patient is unable to take the leaf by mouth. Even with this method, we fail to get results, within five hours.

There is a method of using digitalis, which is rapidly gaining deserved popularity, and this is called "digitalizing" a patient. If a patient exhibits signs and symptoms of a heart lesion, and is about to be delivered, or operated upon; or, possibly, in early stage of pneumonia or influenza, and may need digitalis at any time during the illness, a drachm of tincture may be given daily in divided doses, for one or two days, and then when stimulation is indicated, later, we get results without delay. This is a practical and satisfactory method.

Recently, in cases of auricular fibrillation, or auricular flutter, when the condition is uncomplicated, and positively diagnosed by electrocardiograph, large, single doses of digitalis leaves have been given, as much as thirty grains, with marked relief from dangerous symptoms, within five to eight hours. Large doses of digitalis convert a case of flutter into fibrillation, and then, when digitalis is omitted, the heart does not return to a flutter, but to the normal rate and rhythm.

Nowhere do we get such gratifying results as in proper use of digitalis, in flutter and fibrillation. Signs of overdose produce nausea and vomiting and, later, heart-block. When pulse falls to sixty beats a minute, or less, digitalis should be omitted, to avoid heart-block. There are several ways of computing a large single dose. Robinson gives fifteen c.c. of tincture, for each hundred pounds of body weight. Eggleston has worked out some practical methods of determining amount of digitalis to be given. Weight of dry drug in millegrams, which is required to kill 1 kg. of cat, when solution is injected slowly and continuously, is usually 100 Mg. and is called "cat-unit." Average total amount of digitalis required for oral administration to man is .15 of one cat-unit, per pound of body weight.

Formula I.

$$\frac{\text{C. U.}^{100} \text{ x } .15 \text{ x wt.}^{150} \text{ in lbs.}}{1000} = \left\{ \begin{array}{l} \text{grams of powd. digi-} \\ \text{talis 2.25 gm. for man} \\ \text{150 lbs.} \end{array} \right.$$

Formula II.

$$\frac{\text{C. U.}^{150} \times .15 \times \text{wt.}^{150}}{100} = \begin{cases}\text{c.c. of tincture 22.5 c.c for man}\\ \text{150 lbs.}\end{cases}$$

Formula III.

$$\frac{\text{C. U.}^{150}}{100} \times 150 = \begin{cases}\text{c.c. of infusion. 150 c.c. for man}\\ \text{150 lbs.}\end{cases}$$

Even with these large doses, we do not get therapeutic action until five or six hours after initial dose.

Hatcher gives 1½ grams per 150 pounds body weight, and gives it in divided doses, 50% at once; in six hours, 40%; and in four hours, the remainder.

Three principles are involved in using digitalis, as noted by Willius: first, use of a potent preparation; second, sufficiently large doses to obtain desired action; third, physiological rest,—during period of administration.

It should be remembered, that 10 drops do not measure 10 minims. There are almost 30 drops in 10 minims, as shown by comparing these vials. This is a frequent mistake of the physician, nurse, and pharmacist, and much of the failure to get satisfactory results, when digitalis is indicated, and given, is due to the extremely small dose administered.

There are usually two or three drops to a minim, according to dropper-lip of vessel, from which fluid is dropped

Practitioners, hesitating to give more than ten or fifteen drops of the tincture every four hours, give a dessertspoonful, or even tablespoonful, of the infusion, and get satisfactory results.

Pardee, in a paper read before the New York Academy of Medicine, December 16, 1919, compared the respective strengths of official tincture and infusion, and showed that one drachm of infusion equalled 8.7 minims of the tincture. A tablespoonful of infusion does not appear to be such a large dose, but the average physician would hesitate to give thirty minims of the tincture, and yet that would not be as large a dose.

The quickest acting circulatory stimulant is strophanthin, the glucoside of strophanthus, when given intravenously, 1/60th grain, best given with normal salt solution.

This is a maximum dose, and should not be repeated for a day or two. It acts almost instantaneously, the effect being well marked in three minutes, and is the safest and most dependable treatment for acute heart-failure.

Mrs. M. E. L., aged 36 years, was referred to me July 3, 1919, by Dr. Frederick L. Good, with following history. Had been married ten years; had had a miscarriage six years ago, when two months pregnant; had a full term child still-born, four years ago. Normal delivery, and no complications. Last regular menstruation was November 11, 1918. Came to Boston from a distant state for delivery. Family History—Negative. Past History—Had diphtheria at eight, and typhoid at sixteen; otherwise negative. Habits—Uses tea and coffee in moderation. Denies use of drugs. Present Illness—First learned that she had a serious heart condition about four years ago. Has had no symptoms of trouble other than distress after climbing stairs, or unusual exertion. With exception of "usual morning sickness," has had no symptoms until the long train ride, which tired her greatly, and caused some blueness of finger tips and lips; a shortness of breath, which came without exertion on her part, and a swelling of toes and feet, worse at night, but disappearing in the morning. Patient was unable to lie on left side, owing to "smothering," which bothered her very much.

Physical Examination—Fairly well developed and nourished. Height, 5 feet, 7 inches. Weight, 130 pounds (normal weight, 115). Heart—Area enlarged. Right border 3 cm. from midsternal line, and left border, 13 cm. Apex in sixth interspace, outside nipple-line. No thrill. Loud systolic murmur at apex, transmitted to axilla, and heard at angle of scapula, posteriorly. Pulmonic second was accentuated. Heart was markedly irregular, and occasionally intermittent. Apex count was 104, and radial was 68. Blood-pressure—Systolic, 110; and diastolic, 75. Hemaglobin, 70%. Urine—Amber, 1020; sugar, 0; alb., sl. trace. Wassermann, negative.

Patient was treated along general lines, with rest, digitalis, supervision of diet, graded exercises, etc. Patient enjoyed good health, until July 26, when she entertained a relative at tea: and later ascended stairs, as elevator in building was not running, on account of some defect. At midnight, the husband was awakened by stertorous breathing of wife, and found her unconscious, quite cyanotic, and, apparently, dying. I saw patient fifteen minutes later, and quite agreed with another physician who was in the building, and had responded to emergency call, that patient was "almost gone," being almost pulseless.

Having had some very gratifying results with intravenous injections of strophanthin, I gave the contents of an ampoule, about 1/60th of a grain, first diluting with normal salt solution, and giving slowly.

The results were most satisfactory, the patient gradually losing her cyanosis, and within five minutes was conscious, with fairly good pulse.

Labor started up at about six o'clock A. M. and it was decided that a Caesarean operation offered the best chance to both mother and babe. Patient was able to be removed to a hospital three miles away and stood her etheribation and operation nicely.

Another intravenous injection of half an ampoule, 1/130th grain of strophanthin was given during the operation, as patient became somewhat cyanosed. Patient made an uneventful recovery, was watched through her convalescence, during which she received digitalis, and was discharged the latter part of August, when she returned to her home. Patient is still living.

In closing, I would say that, in cases of acute heart failure, where patient must be helped within three to five minutes, strophanthin, in maximum dose, is indicated, given intravenously.

In cases not so acute, digitalis leaf, in maximum dose, by mouth, is indicated, with exceptions already noted, and with care to have a dependable digitalis.

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VESICO-INTESTINAL FISTULA: REPORT OF A CASE: END RESULTS.

BY F. F. DOGGETT, M.D., BOSTON.

As regards the treatment of these somewhat rare lesions, it is the purpose of this paper to emphasize the desirability, in certain cases, of doing a colotomy with the formation of a permanent artificial anus, rather than the more or less hazardous operations of either resecting a portion of the intestine, or of suturing the openings in the adherent walls of the bowel and bladder after severing the fistulous connection.

In cases of malignant disease, involving the sigmoid or the ileum, or both, with the fistulous opening into the bladder, most surgeons would probably agree on establishing an artificial anus as the best course to take.

But in a certain proportion of cases of vesico-intestinal fistula, non-malignant in character, there is found such a mass of infiltrated tissue between the intestinal and bladder walls that surgical interference seems well nigh hopeless; especially, as in most of these cases we have to deal with a dilated sigmoidal wall having a tendency to start up a septic inflammatory condition, induced by the irritation of long retained and hardened feces. Of course, this state of things should be determined by a preliminary exploratory laparotomy.

This pathological condition, whether we call it a diverticulum or megacolon, excluding congenital cases, occurs, for the most part, in patients beyond middle life. With this in mind, the supposed great inconvenience of a permanent artificial anus is decidedly lessened for obvious reasons.

In reviewing many of the reported cases, where there was resection of the intestine, or obliteration of the fistula by separating the parts and suturing the wounds thus made in the adjacent bladder and intestinal walls, the conservative mind is impressed by the serious difficulties and even dangers of such operations. This would be justified if there was no alternative surgical relief to be had. Also, if in the surviving cases, we could guarantee permanent good results as the experience of the past shows that we cannot. For, knowing as we do, from the use of barium enemata and radiographs, that in many cases more than one diverticulum is likely to be present and cause another vesico-intestinal fistula, it is reasonable to conclude that even other such fistulae will form later in such cases.

As to resection of the intestine, although there are on record isolated cases of brilliant results, the fact remains that, suturing together the severed ends of the colon under the expectation of successful union of the parts is, in the average case, doubtful: first, on account of the difficulty of joining sections of different calibers—in a case recently reported, one section was almost twice the size of the other; secondly, on account of the diminished chances of healing, due to the previous continued dilatation and irritation caused by the pressure of the hardened and long-retained feces; also the bowel walls are usually found to be greatly thickened and the tone of the muscular parts therein diminished, as well as those of the blood vessels. Also it should be noted that these conditions are more pronounced in persons past middle life; these are the cases now under consideration, for the most part, in this paper.

If the patient in the case here reported, could have known of the above described conditions, would he not naturally have asked why he should be called upon to undergo the risk to life of a resection of the lower bowel, or even the less serious operation for closing the fistula, but not insuring him permanent relief; when, on the other hand, the comparatively safe lumbar colotomy and the forming a permanent artificial anus would give him twenty years or more of a healthy and useful life?

I was first called to this case in December, 1894. I found a thin, frail looking, anaemic man, of a sallow complexion, 27 years of age, and married. A brass-molder, by trade.

There was no history of tuberculosis or venereal disease, nor of any inflammatory disease of the abdomen. He stated that he had had a chronic diarrhea for about 15 years, interrupted with periods of constipation. Up to about twelve years of age, his bowels had given him no trouble. In the later years of his chronic diarrhea, he had had, at times, bladder symptoms, with local pain and tenderness. These attacks usually lasted but a few days at a time, and seldom had kept him from his work.

Now, in the present illness, he has had a severer attack than ever before, of pain and tenderness across the lower bowels; also urgency, frequency and tenesmus in urinating. This had kept him from his work for several days. He had taken a cathartic and had a few watery stools mixed with some hard fecal masses as a result. There was much belching of gas, but no vomiting at any time. His temperature was 101.5; pulse, 90. He had had one or two chills within the 24 hours. On account of the unusual thinness of the abdominal walls, it was possible to make out, by palpation and percussion, a hard and somewhat elongated mass in the lower abdomen. It extended an inch or more on both sides of the median line. It was not very tender, except on deep pressure. There was no tenderness or fullness over the appendix or in the left iliac fossa. A catheter passed freely into the bladder and two or three ounces of clear urine were drawn. There was no abdominal rigidity, nor tympanites. Taking into account the chills and fever, combined with the local symptoms, the probability of abscess formation was entertained. However, no fluctuation by rectal or abdominal examination could be detected. During the next two weeks the fever persisted. On the tenth day, the temperature was 102.5, the pulse, 108. Rather active catharsis, also several large enemata, failed to evacuate much fecal matter; nor was there any noticeable reduction in the size of the mass. Gradual improvement of the symptoms now occurred, so that the patient was able to work after five or six weeks' illness.

During the following spring and summer, he worked most of the time, but with the old symptoms of alternate diarrhea and constipation and bladder trouble, all increasing as compared with the condition in the past years.

On August 10, I was again called, and found much the same symptoms present as in the previous December. But the pulse and temperature were normal. The hard mass behind the bladder had increased in size to some extent.

On August 17, foul gas was noted as coming from the urethra, soon after, followed by fecal matter; leaving no doubt that there was a vesico-intestinal fistula present.

I now sent him to the Boston City Hospital, where he remained about four days. He reported to me at his home about the first of September, that he had been examined in the hospital, under ether, and, as the surgeons said that nothing could be done for him, he was forthwith discharged. He now noted that there was but scanty passage of urine, accompanied by occasional very painful voiding of hard bits of fecal matter from the urethra. His chills and fever also returned. On September 5, his temperature was 102.5; pulse, 115. The abdominal pains and tenderness had also increased.

In consultation with another physician, it was decided that there was a fistulous opening into the bladder from the colon, judging from the hardened fecal matter coming from the urethra; also, from the fact that some of the tumor was to the right of the median line, it was possible that there was a connection between the ileum and the bladder. It was also believed that there was pus formation in the parts mentioned, or elsewhere in the pelvis. Also that the hardened, thickened mass was probably made up, in part, of infiltrated scar tissue, a product of the inflammation of the previous December, and of possible sub-acute attacks in earlier years, and that, probably, old fecal scybalous fragments were embedded in the mass. From the history of the case and the absence of glandular enlargements, it was thought that malignant disease was unlikely.

On September 8, I sent him to the Massachusetts General Hospital. On September 27, an exploratory laparotomy was done, and the findings were as follows:

Copy of the hospital record:

"Mass behind bladder, more prominent on the right than on the left; 3½ inches long, 2 thick and 3 wide, rather firm and irregular. Glands throughout the mesentery enlarged. Operation considered not advisable. Mass evidently intestinal, probably last part of sigmoid or first part of rectum. No pathological examination."

I next saw the patient at his home, on November 5. He had been discharged, unrelieved, from the hospital a short time before. The man, who was unusually well educated and intelligent for one in his station of life, gave me to understand that the hospital surgeons regarded his case as hopeless, on the ground that the tumor was probably cancerous.

The symptoms as above described had, if anything, increased in intensity, but there was now no fever present, and the abdomen wound had healed. In addition to the urgency and frequency, pain and tenesmus in passing the urine, ladened with pieces of fecal matter, the quantity passed from the urethra was decidedly diminished for the 24 hours. On examining the stools, it was evident that a considerable part of the urine found vent through the vesico-intestinal fistula into the sigmoid and rectum.

On each second or third day, cathartics, enemata, and some massaging of the lower bowel, produced watery evacuations mixed with hard fecal masses. There was considerable exhaustion following. There was much pain at these times and also at the often futile attempts at urination. The outlook from the supposed malignant condition was so discouraging, that morphine had to be used almost daily. Under such conditions, the man lived on for the next five years, with a gradual increase in the dose of morphine. In March, 1900, he was taking, on some days, as much as five grains. His weight was reduced to 75 pounds from a former weight of 130.

The abdominal tumor, examined after evacuating the bowel as far as possible, had not increased in size during all these years, nor had there been any further pus formation in the parts, as he had no fever or chills.

In the latter part of this year, I persuaded him to seek surgical relief in another hospital. Here a lumbar colotomy was done and a permanent artificial anus established. Soon after the vesico-intestinal fistula healed up. The cessation of painful bladder and bowel symptoms was so complete that no further use was made of morphine. His appetite and strength returned; also his weight, so that by the summer of 1901 he weighed 125 pounds, and at this time was able to do light work.

In 1902, the surgeon who had done the colotomy the year before examined him, in order to decide whether a radical operation on the intestine was called for. The patient was so comfortable that no further surgical operation was thought best.

During the subsequent 20 years since the colotomy, this man has had good health, and has worked most of the time as a dry goods salesman. Now, at the age of 54, in 1921, he states that the care of the evacuations through the artificial anus has caused him but little trouble or discomfort during all these years. Neither his family nor close associates have ever noticed any offensive odor from his person. Occasionally he has constipated stools by the artificial anus; sometimes with a little blood and some pain. He reports that he can feel no unusual hardness or swelling in the lower part of the abdomen; also that micturition is, and has been for many years, perfectly natural and without discomfort. His present weight is 133 pounds.

It is probable, previous to the onset of his illness in 1894, that for many years—fifteen or more—during which he had had bowel and bladder symptoms, the walls of the sigmoid and, possibly, of the ileum, were attached to the bladder as a prelude to the formation of the fistula. There was, possibly, a diverticulitis of the sigmoid, though not so stated in the hospital report, and then ulceration through, into the bladder.

It is hard to explain why the larger part of the mass was to the right side of the median line. The sigmoid, in this case, may have had multiple diverticula displacing a portion of it to the right of the bladder and so producing a mass of inflammatory infiltration in that quarter. Or there may have been an inflammatory condition between the last part of the ileum and the bladder.

After consulting some of the records of patients with artificial ani, scattered through surgical literature, usually incidental to more serious abdominal operations than simple colotomy, it is surprising to find how little is the inconvenience they complain of.

As this condition is mostly found in malignant disease of the lower bowel, and usually in the later decades of life, the period of caring for the new-made intestinal exit is generally limited to the space of a few years before death. But I am now especially referring to non-malignant cases, like the one here reported, where the person, supposed to be thus handicapped, has lived for many years a normal and useful life. I have found no previous record where one has lived for 20 years. Many were found where the condition had lasted between five and ten years.

The successful management of artificial anus in the individual cases depends, to a great extent, on an intelligent selection of a diet, tending to keep the contents of the intestine best adapted to the new exit, so that it shall neither be too fluid nor too solid; also, it depends on habits of watchful cleanliness.

With the above considerations in mind, not forgetting that it takes more than a few instances to prove any truth, in cases of diverticulitis of the sigmoid resulting in ulceration and perforation into the bladder, whether malignant or not, and especially in patients beyond middle life, it is not unreasonable to conclude that the comparatively simple and almost riskless, and also old-established operation of lumbar colotomy, with permanent formation of an artificial anus, would be, in many cases, for the patient, better than resection of the parts, with its serious risk to life; or than the lesser operation of severing the parts and suturing the remaining openings into the bladder and the intestine, remembering that, at best, there is uncertainty of this operation giving permanent relief, and it may result in death of the patient, as reports of some recent cases have proved.

The thirty-first annual session of the New York and New England Association of Railway Surgeons will be held at the Hotel McAlpin, New York City, on Saturday, October 29, 1921. Dr. Charles Mayo will deliver "The Surgery of the Stomach and Duodecium," by leading authors.

Dr. J. Frank Black, *President*,
White Plains, N. Y.
Dr. George Chaffee, *Cor. Secy.*,
Binghamton, N. Y.

PROLAPSE OF THE UTERUS DURING PREGNANCY.

By G. M. Garland, M.D., Boston,

Formerly Physician to the Woman's Room in the Out-Patient Department of the Massachusetts General Hospital.

In a recent paper, I discussed the sufferings that are associated with ordinary prolapse of the uterus. With the advent of pregnancy, there begins an increase in the volume of circulation through the uterus. The growth of a foetus and its attendant membranes necessarily add to the weight of the womb. It would seem a natural inference that under such increase of weight the uterus should acquire a greater liability to prolapse, and that such prolapse should be accompanied by a group of sufferings analagous to those described in our preceding article. That such are the facts of the cases, is the thesis of this paper.

Many years ago, acting upon the suggestion of this thought, I began to treat all my cases which presented symptoms of distress during the early months of pregnancy by the same method which I employed in ordinary cases of prolapse not complicated by pregnancy. It is a familiar fact that the sufferings which are included in the group of so-called pregnancy symptoms are usually confined to the first four months of pregnancy. Subsequent to that date, the ballooning of the fundus of the uterus by its growth raises it above the support of the rim of the pelvis and prolapse becomes less possible, except by extreme violence. It is also a familiar fact that, subsequent to this date, the group of symptoms especially referred to, ordinarily ceases to be prominent. A few cases will serve to illustrate my meaning. They are quoted from an article in the *Transactions of the Association of American Physicians* in 1893, entitled, "Vomiting Caused by Malposition of the Womb."

Case 1. Mrs. H., primipara, twenty-two years of age, about two months along. I was called to see her on Sunday, July 3, 1892. She had been vomiting incessantly since the previous Tuesday. Food and drink were instantly rejected by the stomach. She was excessively emaciated, and there was a large ecchymosis over the crest of the ilium on the right side, which had appeared that day, and without known cause.

The womb was as large and broad as it should be at that stage of pregnancy. The fundus was quite firmly wedged behind the symphysis; the cervix was soft and flexed in its upper third. The womb was not very tender to pressure. I replaced in the knee-shoulder position with some difficulty, owing to the wedging of the fundus behind the symphysis.

No medicine was given. The patient did not vomit for more than twenty-four hours, and her appetite began to come back. On the afternoon of July 4, she vomited once, and I found the womb again wedged. I replaced it and held it by a tampon. In the early morning of July 5, she vomited once more. I took out the tampon and inserted a soft rubber ring. The patient was so much improved that she craved meat and a general diet; in fact, she ate so heartily, that she brought on a typical sick headache, which lasted a few hours, and was relieved by a purgative. After this, there was no more nausea or vomiting during the remainder of the pregnancy.

CASE 2. Mrs. D., pluripara, about two months along, had suffered three weeks of severe vomiting, was confined to bed, and had tried many drugs, without avail. She had taken a morphine suppository of one-fourth grain strength, with very little effect, on the evening before my visit.

The womb was anteflexed and sinistroverted. It was not impacted, being freely movable. The womb was replaced. During that day, she was given one more morphine suppository by her mother. The vomiting ceased for forty-eight hours, and then returned as bad as ever. The womb was again replaced and held by a pessary. The relief was marked and the patient gradually recovered. The case, however, was complicated by a large amount of albuminuria. In spite of the kidney complication, the simple replacement of the womb did rapidly what many drugs had failed of doing.

Case 3. Mrs. M., pluripara, about two months along; very nervous woman, suffered from puerperal mania with first child; came to my office complaining of an incessant disposition to sigh. Her conversation was constantly interrupted by a deep, prolonged sighing, which was exhausting her strength.

I found her womb retroverted to the third degree. I replaced it, and supported it by a pessary. The sighing was immediately relieved. After about two weeks, the patient removed the support and the sighing returned. I found the womb again retroverted, as before. I replaced the womb and pessary, and there was no more sighing during the balance of the pregnancy.

These cases might be duplicated many times from my experience since that date, but they will serve to illustrate the fact that elevation of the uterus, with consequent release of the venous circulation, is proper treatment for this type of suffering in early pregnancy.

To emphasize my point that the suffering is mainly due to the mechanical obstruction of the venous circulation and the consequent backwater congestion in the uterus, I wish to describe one more case.

Mrs. G., three months along in her second pregnancy; her first pregnancy had terminated in an abortion and under conditions identical with those presented at the time I saw her. She lay in bed, completely prostrated; she could not raise her head from the pillow without great dizziness and violent vomiting. She was unable to eat or retain anything, and was the picture of misery.

On examination, I found the following condition of the uterus, which I wish especially to emphasize. The os was partially dilated, the cervix was flattened out and obliterated, and was of a soft, pulpy consistency. The situation corresponded to the first stage of parturition. The wall of the womb was like a pulpy mass and presented every evidence of over-saturation with blood, that is, a condition of excessive passive congestion. I placed the woman in the knee-chest position and easily elevated the uterus, without force. At the next visit, twenty-four hours later, I found the following conditions: The cervix had contracted back to its normal size and consistency; the os had resumed its normal size; the uterus had emptied itself of the superfluous blood. The patient was very much relieved as to her vomiting and dizziness, though still very weak and prostrated. A pessary was not inserted, but the uterus was restored to position and watched for some time. This woman made a gradual, satisfactory recovery, and bore a perfect child.

The chief point illustrated by this case is the fact that there was interference with the venous circulation, and that relief followed the release of that circulation by correction of the prolopse through elevation of the uterus. I have seen repeated cases presenting like features and relieved by like method. I do not claim that all possible cases of vomiting during early pergnancy are due to simple mechanical causes. There may be hidden chemical processes of pregnancy which contribute to the discomfort of the patient and the complication of her case; but I do know (1) that a very large group of cases occur where the sufferings in the early pregnancy are due to the prolapse of the uterus and consequent complications in the circulation; and (2) that such vomiting is controlled in a large percentage of cases by elevation of the uterus and restoration of the proper circulation.

I wish to refer, briefly, to the theory of Dr. Graily Hewitt of London. He says:

"It has been shown that impaction of the uterus in an anteflexed state is observed in a considerable number of cases of severe vomiting of pregnancy. The occurrence of impaction under such circumstances requires to be attentively considered, as it is evidently an important factor in the causation of the vomiting."

Later he adds: "When the impaction persists, it causes intense degrees of vomiting. Whatever view may be taken of the cause of the impaction, it appears that it can, in the worst cases, be relieved by mechanical means. The impaction is relieved, and its effects (on the vomiting) removed by artificially elevating the fundus; and this is a procedure which, necessarily, more or less alters the shape of the uterus and lessens the degree of the anteflexion present."

While thus according much blame to the impaction. he nevertheless believes that the flexion of the uterus is the chief factor; and even with impaction, he says, the former difficulty is relieved by elevating the fundus and thus lessening the flexion. I cannot agree with Dr. Hewitt in this explanation, because he states only half the facts. Not only the impaction is relieved when the fundus is raised, but the entire womb is elevated with all its circulatory apparatus, but the flexion still remains.

Dr. Hewitt claims that in pushing up the fundus, one must necessarily straighten out the flexion somewhat; but in my cases I did not use force to push up the fundus—the organ tumbled into place of its own weight, as soon as released from impaction, when the patient took the knee-chest position and the vagina was opened. The anteflexion still remained, and yet the nausea and other discomforts were banished.

Dr. Rufus A. Kingman published an article in *American Medicine,* No. 8, August, 1913, in which he names three groups of causes for pernicious vomiting in pregnancy: first, reflex; second, neurotic; third, toxemic. Then he adds:

"There are other pelvic conditions which may give rise to vomiting, but, without doubt, the most serious source of reflex disturbance is found in increase of irritation of the nerve fibres in the cervix, and especially in the region of the internal os."

He thereby accepts Dr. Graily Hewitt's theory regarding the cause of these troubles, and recommends the use of the knee-chest position and digital elevation of the uterine body as remedies. Dr. Kingman claims that ninety-nine cases out of a hundred can be cured or relieved by this method. It is conclusively evident that Professor Graily Hewitt and Dr. Kingman and myself agree as to the method of treating these cases, and as to the satisfactory results obtained thereby. Therefore, I shall not take up time in arguing regarding mere theory. I leave the question of the mechanism of these troubles to the intelligent observation of my colleagues, who have ample opportunity for examining the innumerable cases which occur in their practice.

Before closing, I wish to mention one other group of incidental sufferings that occur in the later months of pregnancy. From the sixth month to the end of pregnancy, after the uterus has risen well into the abdomen and increased in weight, it is very liable to tip forward and thus compress the neighboring tissues between itself and the pelvic arch. This condition frequently results in severe backache and local neuralgia, and often completely disables a woman from rising from her bed or taking exercise. In cases of this sort, I have always placed the patient in the knee-chest position and changed the points of pressure between the uterus and the pelvis, and have, invariably, obtained complete relief from the neuralgia caused by this compression. I will cite two cases.

I saw a patient, one evening, in Newton. She was confined to her bed by backache and abdominal pain. For days, she had been kept under the influence of morphine. I relieved the pressure by the knee-chest method; the pain entirely disappeared, and the patient was able to resume the activities of her life. She had no more trouble during the balance of pregnancy.

The second case was a primipara who had reached the seventh month without any special discomforts, when she was suddenly disabled by backache and abdominal pain. I wrote her a letter, asking her, when undressed at night, to assume the knee-chest position and to lift the womb from the pelvis toward the chest. She reported that this simple measure relieved her of all pain and restored her to her ordinary activities.

There is no doubt, if women could walk on all fours during pregnancy, the history of human gestation would be robbed of great burdens of woe.

WEIGHT PREDICTION BY THE FORMULAE OF BORNHARDT, OF VON PIRQUET, AND OF DREYER.

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and
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[From the New England Deaconess Hospital.]

CHEST GIRTH.

In a recent paper we have traced the development of the various measurements of the length of the body without the legs, ending with a discussion of the recent sitting-height urged by Von Pirquet, and the stem-length formula proposed by Dreyer.

Another of Dreyer's leading principles, since 1909, was the application to a weight prediction formula of the old observation that the surface area of an animal is equal to a constant multiplied by the body weight to the two-thirds power. In the original German, this was abbreviated as: $K = \frac{O \sqrt[3]{G}}{G}$, or, in English, as: $S = kW^{2}/^{3}$. This formula was proposed by Meeh, 1879, on the basis of Moleschott's studies and the fundamental mathematical law that the surfaces of similar solids are proportional to the cube roots of the squares of their volumes, or (if their specific gravities be the same) their weights. Meeh's formula has received much attention from Rubner, 1883, Miwa and Stoeltzner 1898, Lissauer 1903, Moore 1909, Dreyer and Ray 1909, 1910, 1911, Lassablière 1910, Boycott 1911 Dreyer, Ray and Walker 1912, 1913, Howland and Dana 1913, Dreyer and Walker 1914, Gephart and Du Bois 1915, Du Bois and Du Bois 1915, Means 1916, Sawyer, Stone and Du Bois, 1916, Pfaundler 1916, Bernstein 1917, Schick 1919, Harris and Benedict 1919, and Boothby and Sandiford 1920.

Before discussing Dreyer's formula, it may be noted that he measured the chest at the nipple-level in males, that is to say, at the level of the fourth intercostal space in the nipple line; in the case of females . . . . just under the breast . . . . The measurement is that of the normally breathing, *non-expanded*, chest. With the subject standing with arms hanging loosely at his sides, breathing normally and, preferably, talking, he found thus, more regular results than on measuring during extreme inspiration and expiration. This statement, for which he adduces no evidence, has been previously noted, we believe, though we cannot give reference. If a fact, it is a matter not alone of accuracy, but often of clinical convenience. As evidence, there are reported in Table I, some new measurements which show that the measurement was (1) identical with the mean in about a third of the cases, and (2) in the other two-thirds was only half a centimeter different (less, in all instances), a difference of less than one per cent. In children, however, the parallelism between the two measurements is not satisfactory; as will be shown in another paper, what we have called the "resting girth" is, on the average, less than the usual mean girth by about two per cent., and not infrequently by a greater percentage.

Table I.

Difference Between Mean and Resting (Talking) Chest-Girth (in Cm.)

	Maximum	Minimum	Mean	Resting
A. M. W.	103	94	98½	98
D. T. V.	93	83	88	88
W. R.	100	93	96½	96
H. S.	105	96	100½	100
E. B. B.	91	84	87½	87
F. G. B.	95	86	90½	90
F. G. T.	96	86	90	90
H. F. R.	92	86	89	88
H. B. W.	90	83	86½	86
J. C. W.	95	87	91	91
E. H. C.	98	90	94	94
E. P. J.	86	78	82	82
A. H. G.	102	91	96½	96
A. A. H.	89	82	85½	85

Dreyer, in 1919, predicted the chest girth from the weight (the reverse of what we are immediately interested in). He calculated, then, the deviation (difference between the predicted and actual chest), converted this into a percentage, summed these percentages, and finally found the average percentage deviation of the observed from the theoretical girth, to be only 2.62%. This average error was so beautifully small that Dreyer's method merits the most careful attempt at confirmation. His seeming success should, when considered in relation to the prediction of weight from the chest girth, be regarded as open to reservations for the time being. Dreyer and Hanson, then, in 1920, proposed the following formula for predicting weight from the chest girth (in males):

$$W\ (\text{in g.}) = 0.662 \times \sqrt[0.365]{C\ (\text{in cm.})}$$

For the derivation of this formula they refer to the 1919 *Lancet*. The expression there looks rather different: $C = \sqrt[3]{W} / 0.457$, but can be solved. The 1920 formula, however, when solved according to usual mathematical rules, gives weights markedly at variance with those in Dreyer and Hanson's Table II. For example, the latter predicts for a chest-girth of 62 cm. a weight of 26.3 k; where as solution of the 1920 formula yields 53.9 k, and this solution has been confirmed for us by several persons, including a professor of mathematics. There seems, therefore, to be some peculiarity in the notation which makes this formula unserviceable when we have occasion to extend it to persons with chest-girths other than those listed in Dreyer and Hanson's book. This difficulty does not necessarily vitiate the usefulness of the tables, which, in fact, we believe to be great.

WEIGHT PREDICTION FROM BOTH LENGTH AND CHEST GIRTH.

Dreyer realized, as had Bornhardt but practically nobody else before him, that in predicting weight in adults, age was of small use, and that even body length alone was inadequate. Like the Russian military surgeon, he made simultaneous use of the chest measurement, but substituted stem length for stature, and constructed his formula in an entirely different fashion.

To do Dreyer justice, it is important to test his combined formula, using not only chest-girth, but also stem length. For this purpose, figures on few cases are available, only 16 published by him in his 1919 article and the 16 added herewith, in Tables II and III.

While it is devoutly to be hoped that the error will prove no larger "as a result of the accumulation of data," to use Dreyer's own words, the following reservation should be considered. In each series which we have reported, regarding the accuracy of Bornhardt's method, the error has been larger, the larger the series. Now, Dreyer's series of 16 was much less comprehensive than Bornhardt's of 56. Yet, when we applied Bornhardt's method to his own cases, the error was only 4.2% (shown in Table II of our preceding paper, column 3, row VI), which is less than Dreyer's error on 16 cases. Furthermore, even this 4.2% error was deceptively good, since application of Bornhardt's formula to another larger series of 229 subjects yielded a larger error, namely 6.00% (Same Table II, column 3, row IV).

VON PIRQUET'S FORMULA.

In connection with a new and elaborate system of feeding, based on milk values (NEM) instead of calories, Von Pirquet proposed a new formula for determining the state of nutrition. He had observed "that a measurement little noticed hitherto, the sitting height, stands in close relation to the cube root of the body weight." He expressed this in a ratio, which he first called the Gilidusi, in 1916. This he then amended, 1916 1918, 1919, to the Gelidusi, or cube root of ten times the weight in grams divided by the sitting height in centimeters:

$$\frac{\sqrt[3]{10\,W}}{Si} = 100$$

Still later, in 1920, he proposed a new name, Pelidisi, apparently meaning the same as the Gelidusi, but compounded of the initials of Latin (perhaps for foreign consumption) instead of German words. His ideas have been discussed by Bernstein 1917, Von Gröer 1918, Schick 1919, and Faber 1920. As the latter has pointed out, there are "certain minor inaccuracies and disagreements" in Von Pirquet's writings. The most important of these inaccuracies seems to be in his formula as written in his System der Ernährung 1919, II, 287: $100\ (10 \times W \text{ in g.})^{2/3} \div Si = 100$.

If, now, this two-thirds power be considered a misprint for one-third, the formula will read: $100\ \sqrt[3]{10 \times W \text{ in g.}}\ /\ Si = 100$, in which case the Gelidusi will come out approximately a hundred instead of yielding a decimal (as is given by the first sample printed above. according to proposed correction represents correctly, we believe Von Pirquet's theory. His formula, how-p. 216 of Von Pirquet's 1916 article). This ever, has found so much favor in feeding the children of Austria that it must be tested.

It would seem that the fundamental idea underlying the Gelidusi or Pelidisi index might be stated in a style more like the weight prediction formulae used by others. For example, instead of his conclusions that the Index Gelidusi ($\sqrt[3]{10 \text{ weight}} \div$ sitting height) in muscular adults and plump infants averages 100, and in grown children 94, it seems more practical to say that for (1) adults: W (in g.) $= Si^3$ (in cm.) $\div 10$, and for (2) growing children: W (in g.) $= (0.94\ Si)^3 / 10$.

Trial of the children's formula cannot be done here, but for the available adults (Dreyer's and ours) has been reckoned out and is shown in Tables II and III. The Si has been obtained by reversing Walker and Dreyer's rule and so adding 3% to the stem lengths. The error of weight prediction, by this paraphrase of Von Pirquet's Gelidusi, is seen to be 17%, which is enormous, compared with Bornhardt's 8% and Dreyer's 4.47%.

TESTS OF ACCURACY OF BORNHARDT'S, DREYER'S AND VON PIRQUET'S METHODS.

For this purpose, the only available data are given in Tables II and III. These are abridged by the omission of several columns in our originals, for the sake of conciseness. The column marked sitting height was calculated by multiplying the stem length by 103. The column headed E% was arrived at by first subtracting from the actual weight the weight as predicted by the method in question, then dividing this difference by the actual weight, in order to get the percentage error of the prediction method. These prediction errors are summed and averaged at the foot of each column.

On the basis of this limited evidence, Dreyer's complete formula is admirably accurate, and deserves widespread trial.[*]

SUMMARY.

1. Very recently, as our previous paper relating experiments with Bornhardt's method was being finished, two additional formulae for estimating body weight became available in this country, the one by Von Pirquet and the other by Dreyer. Trial of these new methods appeared important. As Von Pirquet, unfortunately, gave no original observations sufficiently complete to serve as a basis of comparison of the three methods named above; and as Dreyer has published such observations on only 16 subjects, the data on another group of 16 persons is here reported.

2. The weights of the above 32 healthy males, aged 13 to 52 years, were predicted by Von Pirquet's formula with an error of 17% on the average, by Bornhardt's with an error of 8%, and by Dreyer and Hanson's method with the low error of 4.47%. Clearly, the last named formula deserves further trial.

We are indebted to Prof. W. R. Miles of the Carnegie Nutrition Laboratory for calling our attention to the work of Von Pirquet and of Dreyer, and for lending us the hitherto inaccessible books recently published abroad by these authors.

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[*] With regard to children, the following interesting figures might be included. They are derived from two children who have been under constant observation and have been always healthy.

Case 1. H. G., age 4 years, 4 months; height 110.5 cm., sitting height (actual measurement) 63.0 cm., stem 62.5 cf., chest 57.0 cm., weight 20.9 k.; error of predicted weight, in per cent. of actual weight, according to Von Pirquet's formula 31%; according to Bowditch's table, but following the requirement of Holt, 1919, that weight should be predicted according to height and not age, 9%; and according to Dreyer and Hanson's formula, 0%!

Case 2. A. M. G., age 3 years, 2 months; height 104 cm., sitting height 60.0 cm., stem 59.5 cm., chest 57.0 cm., weight 19.5 k.; per cent. error, according to Von Pirquet, 22%; according to Bowditch-Holt, 6%; according to Dreyer-Hanson, 0%;

It will be noted (1) that the Dreyer-Hanson rule is perfect; and (2) that, at this age, the sitting height is less than 1% above the stem length, instead of 3% as reported for adults by Walker and Dreyer.

TABLE II.—NORMAL MEN (DREYER, 1919).[*]

ACTUAL OBSERVATIONS							CALCULATED PER CENT. ERROR OF WEIGHT PREDICTED BY METHOD OF				
No.	AGE	W (kg.)	H (cm.)	SITTING HEIGHT (cm.)	STEM LENGTH (in cm.)	C (cm.)	BORNHARDT H×C (cm.) ×91	DREYER according to chest	DREYER according to stem	DREYER combined	VON PIRQUET
16	13	29.8	140	74	71.5	67.5	30	14	5	9	26
15	14	38.9	156	76	74.0	73.3	21	6	10	2	13
14	15	41.2	150	80	77.5	76.7	15	20	2	9	24
10	29	56.3	161	90	87.0	87.4	2	20	3	10	30
13	18	58.6	169	91	88.5	79.6	5	9	5	2	29
4	28	63.5	172	88	85.0	88.8	1	11	15	1	7
6	31	63.5	171	93	90.2	92.2	3	22	2	12	27
2	35	63.5	172	95	92.0	85.2	5	1	9	4	35
9	25	63.5	171	91	88.0	85.2	6	1	6	4	19
11	22	66.9	180	94	91.0	86.0	4	3	0	1	24
5	43	69.1	164	89	86.0	91.3	11	9	19	5	2
3	32	74.6	185	98	95.2	93.2	4	7	4	5	26
7	35	77.4	173	94	91.5	96.4	12	12	13	1	7
8	25	81.0	181	98	95.4	92.2	15	4	4	4	16
12	24	81.1	178	93	90.0	95.2	13	7	21	8	1
1	52	88.8	186	102	98.5	96.1	17	2	4	3	20
Sum							164	148	122	80	3060
Mean							10.3	9.3	7.63	5	19.1

[*] Weights and measurements *net*.

TABLE III.—NORMAL MEN (NEW OBSERVATIONS PRESENTED).*

	Actual Observations						Calculated Per Cent. Error of Weight Predicted by Method of				
Name	Age	Net W (kg.)	H (cm.)	Sitting Height (cm.)	Stem Length (in cm.)	C (cm.)	Bornhardt H×C (cm.) ×91	Dreyer according to chest	Dreyer according to stem	Dreyer combined	Von Pirquet
T. P. H.	28	62.6	174	98	95	82	6	9	21	6	6
H. G.	33	77.1	181.4	97	94	96	7	13	4	5	7
A. M. W.	24	87.1	186.4	102	98.5	98	13	6	2	2	5
D. T. V.	22	70.3	177	98	95	88	8	3	9	3	6
W. R.	24	85.3	189	102	99.4	96	12	2	3	3	5
H. S.	23	80.7	183	95	92.4	100	6	21	13	4	11
E. B. B.	25	63.5	179	92	89.3	87	1	5	1	2	22
F. G. B.	25	68.5	178	93	90	90	3	7	6	1	18
F. G. T.	23	63.5	170.5	92	89	90	1	15	2	7	22
H. F. R.	30	68.9	175	96	93	89	7	3	4	3	11
H. B. W.	23	62.1	174.5	95	92.4	86	0	4	13	9	15
J. C. W.	26	70.8	184	95	92	91	3	6	3	2	13
E. H. C.	24	69.9	173	92	89	94	4	18	11	3	20
E. P. J.	52	60.8	175.5	91	88	82	2	7	2	4	26
A. H. G.	32	78.9	171	94	91	96	14	10	16	3	14
A. A. H.	34	68	171.1	96	93.1	85	14	8	5	7	30
Sum							101.7	145.7	113.7	63.1	231.5
Mean							6.36	9.1	7.1	3.94	14.47

* Weights and measurements *net*.

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Book Reviews.

Orthopaedic Surgery of Injuries. By Various Authors. Edited by Sir Robert Jones, K.B.E., C.B., F.R.S., Director of Orthopaedics, St. Thomas's Hospital; Surgeon, Royal National Orthopaedic Hospital; Consulting Orthopaedic Surgeon, Royal Infirmary, Liverpool; Hon. Advisor to the Ministry of Pensions (Orthopaedic Surgery). London: Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E. C. 4. 1921.

This is a book of two large volumes contributed by British and American authors and embodying the experiences and lessons of the war in the care of the wounded man from the orthopedic standpoint. A perusal of the book demonstrates, in no uncertain manner, the scope and range of the orthopedic surgery of today. It impresses the reader with the wide applicability to civil accident cases of the methods of prevention and correction of deformity. Here is set down before the surgeon, with the most meticulous care and attention to detail, the many pitfalls that await him if he neglects the principles that must control the prevention of deformity. It is pointed out, also, that in cases which require remedial and reconstructive treatment for bone, joint, muscle, and nerve injury, failure will be the meed of mere operative treatment of a case, without due attention to the equally essential pre- and post-operative care.

Sir Robert Jones, in the preface, relates the history of orthopedic centers, known later as special surgical hospitals, in England during the war, where all ununited and malunited fractures, stiff joints in bad functional position, flail joints, and cases of nerve injury and paralysis were segregated. The special reconstructive hospitals were under the care of both general and orthopedic surgeons experienced in these methods of treatment.

Volume I is largely taken up with the surgery of the bones and joints in relation to war injuries, and begins with sections upon the Principles of Practice of Hugh Owen Thomas by Professor Keith, and the Principles of Orthopedic Surgery as Applied to the Military Need by Colonel Goldthwait, U. S. Army. Then follow sections on fractures and the splinting of fractures, dealt with from the clinical and practical standpoint. Hey Groves writes excellently upon the question of ununited fractures and their treatment. The important subject of Chronic Osteomyelitis and Amputations is carefully dealt with by Mr. R. C. Elmslie. Chapters devoted to the surgery of the main joints in turn, anatomical, operative, and splinting necessities receive full consideration. The Orthopedic Surgery of the Hand and Wrist by Lieut.-Col. W. I. Baldwin of San Francisco, is especially good, as is the chapter on disabilities of the knee joint by Mr. S. Alwyn Smith. Sir Robert Jones, in this volume, deals with the subjects of mal-union of the femur and the question of flail, ankylosed and stiff joints. A chapter upon the organization and equipment of Centers for the Limbless by Sir John Lynn Thomas completes the volume, which is beautifully produced and illustrated. Many of the sections contain references to actual clinical cases which are followed up from the start to the completion of their treatment.

The second volume is largely given up to the consideration of the subject of Peripheral Nerve Injuries. Section No. 1 deals with the Anatomy of the Peripheral Spinal Nerves, and many helpful diagrams are introduced. Separate chapters deal with the diagnosis, prognosis, and post-operative treatment of injuries of the peripheral spinal nerves, and a study of the end-results of operations for nerve injuries is given by Dr. Forrester Brown and Mr. Beresford Alexander. The section upon the operative treatment of war injuries of the peripheral spinal nerves by Sir Harold Stiles is a mine of anatomical information and surgical technique, and is marked by beautiful illustrations of actual operations upon such cases.

The subjects of tendon transplantation and tendon fixation in irreparable injury to peripheral nerves is next taken up, followed by chapters dealing with Injuries of the Head and Spine by Percy Sargent and Farquhar Buzzard. There are two chapters upon Plaster and Splints used in injuries of the extremities, with full details as to their making and application. Special sections take up the departments of Electrotherapy, Massage, Hydrotherapy, Remedial Gymnastics, and Orthopedic Roentgenology. An article is contributed by King Manuel of Portugal on the organization of curative workshops, to which he devoted so much time and energy during the war.

The work is of great value because based on the widest and most concentrated experience in the treatment of bone, joint, muscle and nerve injuries. The application to the injuries of civil life is direct. The articles are carefully written, profusely illustrated, and have a very practical bearing on the treatment of these injuries in civil life. There is no book in English, which has appeared since the war, that is so authoritative. It is far from a simple historical review or an end-result report. It is teeming with practical applicable suggestions. No man was able to bring about such a sweeping reform in the treatment of bone and joint war injuries as Sir Robert Jones. His wide horizon, great personal skill, and convincing demonstration of functional reconstruction induced the British government to establish the chain of orthopedic centers, or, as they were later called, special surgical hospitals, in which were learned the lessons which this work describes. The book should help greatly to solve many problems of industrial medicine and surgery.

Injuries and Diseases of the Bones and Joints. By Baetjer and Waters. New York: Paul B. Hoeber, 1921.

The need of a book dealing with the x-ray study of bones is an urgent one; as precise, well arranged information, along with clearly illustrated pictures, would be a definite help to the surgeon who must approach affections of bone through the medium of x-ray.

The book under consideration partly fulfils these requirements. The ground covered is ample, but the allotment of space is not good. Important subjects are dealt with very incompletely and less unimportant ones at more length. The book opens with a consideration of normal bones, the appearances and consolidation of the epiphyses is dealt with, and one on the lower extremity. These chapters take about eighty pages out of a total of three hundred and thirty, and are fairly satisfactory, but the x-ray study of fractures cannot, of course, be done in this space, and it apparently takes too large a proportion of the book in place of other subject more in need of elucidation by the x-ray. Congenital dislocations, for example, are very imperfectly considered; bone infections receive twenty pages; and the consideration of tuberculosis is very imperfect and incomplete, appearing in two or three places, and not being adequately treated in any one of them. In the same way, the disproportion of space is very noticeable in other places—the important subject of abnormalities, spinal injuries, and similar objects receiving very incomplete consideration.

The text in general is sound, but in it and in the text under the pictures, there is a tendency to loose statements that should not occur in a book that is to be authoritative. For example, in Figure 13, showing the appearance of the epiphysis, where the only interest of which is the age of the child, the text simply states that it is at an early age. It is also stated that bone atrophy is "entirely a disuse process." This may be the case, but it must be remembered that there is a good deal of literature to show that a reflex element may enter in as well. Club foot is classed among congenital dislocations, and in the same chapter comes a typical case of coxa valga due to poliomyelitis Figure 166 shows a dislocation of the elbow followed by deposition of bone in the torn ligament, causing ankylosis, and no mention is made of myositis ossificans, which would seem to be at least worthy of consideration, inasmuch as the new bone extends far beyond the insertion of any ligament.

The consideration of bone infections, as has been said, is inadequate, and Figure 186 shows a "vacuolated area in the head of the radius, known as Brody's abscess." In addition to the mispelling of a very important name, no attention is given to the fact that similar conditions indistinguishable in the x-ray arise from tuberculosis.

As an instance of the disproportionment of space, three pages are given to leprosy and coccidoidal granuloma at the expense of tuberculosis and equally important subjects.

The consideration of rickets is unsatisfactory, as it does not deal with two characteristic changes—one the failure of the epiphyseal body to consolidate definitely, and two, it does not call attention to the thickening on the concave side of the bone, which is so usual in distinguishing rickets from syphilis.

In Figure 220, a wholly unwarranted statement is made that "new bone production is not seen in a straight tuberculous infection." In a chapter classed as "dystrophies," are considered ostitis deformans, acromegaly, osteomalacia, and chondrodystrophy.

In spite of these defects, however, the book is interesting, in general sound, and covers a somewhat neglected territory. Many of the illustrations, however, are so poor that they do not really show anything, and it is a pity that so important a book should not present a standard which in these days is obtainable in the reproduction of illustrations. This sort of thing is instanced in Figures 2, 3, 99a, and 102, and unfortunately, in many other places. The paper, the style of printing, and the make-up of the book are excellent. No references are given in the book to authoritative articles.

Current Literature Department.

ABSTRACTORS.

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MEDICINE.

Industrial Lead Poisoning.

Glue, M. D. (*Jour. A. M. A.*, March 28, 1921) states that:

Certain signs and symptoms of plumbism have been given somewhat more importance as diagnostic points than they deserve. These are anemia, basophilic degeneration of the red cells, hypertonus and constipation.

Pronounced anemia is present in only relatively few cases; in many severe cases there is no anemia whatever. The pallor that is usually present is, therefore, due to some other cause—possibly a constriction of the peripheral blood vessels. Basophilic degeneration of the red cells is rare in chronic cases, and its value as a diagnostic point, even in acute cases, has probably been overrated.

The presence of hypertonus is extremely variable. Among a group of pottery workers exposed to lead dust, there was practically none; but among a group of lead refiners exposed to lead fumes, it was present in nearly every case. The cause of this variance is unknown; however, the difference in the form of the lead to which the different groups are exposed may have something to do with it. Hypertonus is nearly always present during attacks of colic.

Although constipation is usual, it is not invariably present. The assumption, therefore, that a patient who is not constipated does not have lead poisoning is fallacious. Many cases of plumbism—especially acute cases—occur without constipation.

A point of diagnostic value which appears to have escaped recognition, except by Hayhurst, is the presence of mononucleosis in chronic cases. This is almost invariably present.

The presence of a lead line is also extremely variable. In my series, it was present in about 90% of the cases. Other investigators have sometimes found it present in not more than 20% of their cases. This difference, like that in the case of hypertonus, may possibly be due to the difference in the form of the lead in which the patients were exposed.

In the treatment of plumbism, prophylaxis is of much more importance than the curative treatment. By means of proper working conditions and medical supervision on the one hand, and the observance of the rules of personal hygiene and common sense, on the other, together with coöperation between employers and employees, the incidence of plumbism in American industries could be greatly decreased. Proper compensation for occupational diseases is a necessity, and it would help to decrease both the incidence and severity of lead poisoning.

If the cause of the poisoning is removed, the prognosis, except in a few cases, is good even without medical treatment. If, however, lead continues to exert its deleterious effects through small, steady doses, the case steadily progresses, finally terminating in some form of paralysis or in some of the common degenerative diseases. As a rule, lead poisoning is a disabling rather than a fatal disease, although in chronic cases it undoubtedly hastens death.

Vital statistics of all occupational diseases, including lead poisoning, are very incomplete. Rapid progress by state or federal agencies in the devising of methods for the prevention or cure of all such diseases cannot be made unless there is prompt and complete reporting of all cases. [E. H. R.]

OBSTETRICS.

The Diagnosis of Pregnancy by the Roentgen Ray.

Bartholomew, B. L., and Calloway, J. T. (*Jour. A. M. A.*, April 2, 1921) found that:

1. A positive diagnosis of pregnancy has been made by demonstrating portions of the fetal skeleton in utero as early as the end of the fourth month of gestation (Edling, case 17).
2. The earliest positive diagnosis in this series of cases was obtained at the beginning of the fifth month of pregnancy (Case 9).
3. During the third month of pregnancy, roentgenoscopy is uniformly negative.
4. During the fourth month of pregnancy, a positive diagnosis may very exceptionally be obtained toward the last of this period.
5. During the fifth month of pregnancy, a positive diagnosis of pregnancy may be obtained in at least one-third of the cases.
6. During the sixth month, a positive diagnosis may be obtained in at least one half of the cases.
7. During the seventh, eighth, and ninth months of pregnancy, a positive diagnosis of pregnancy should be obtained in the great majority of all cases.

[E. H. R.]

PHARMACOLOGY.

Some Factors Relating to the Toxic Action of Arsphenamine.

Hunt, R. (*Jour. A. M. A.*, March 26, 1921) states that:

The symptoms (in rats) caused by m-amino-p-hydroxyphenylarsenous oxid ("arsenoxid") are very characteristic; the presence in arsphenamin of a percentage of "oxid" too small to increase greatly the toxicity can readily be detected by the symptoms; confirmatory evidence of the presence of the "oxid" (or of some oxidation product of arsphenamin) in a toxic preparation of arsphenamin is obtained by treating the solution with sodium hydrosulphite: this leads to an immediate diminution of the toxicty if the latter is due to the presence of the "oxid."

No toxic commercial preparations of arsphenamin have been encountered, the toxicity of which could be attributed to the presence of the "oxid."

Some preparations of arsphenamine are very toxic when the solutions are prepared at ordinary room temperature; the toxicity is greatly reduced by gently warming and, in some cases, by allowing the solutions to stand for a time at room temperature. Cold may preserve the toxicity for long periods. (Preparations which, after warming, may be tolerated in doses of 150 mg. per kilogram may kill in doses of 60 mg. before warming.) It is considered probable that the undue toxicity of such preparations is due to the physical state of the solution, and that this undergoes a rapid change when the solution is warmed.

[E. H. R.]

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SOME QUESTIONS RELATING TO TUBERCULOSIS.

Although to some practitioners the subject of tuberculosis does not arouse enthusiastic interest, the problems are serious and many feel that there is yet much to be learned; and since it is contended that some pulmonary lesions present signs and symptoms practically identical with those resulting from the invasion of the bacillus of tuberculosis, the articles prepared by Dr. Hawes are stimulating and to some will be found to be encouraging.

The first paper on this subject appears in this issue of the Journal. In connection with this subject, the recent veterinarian conference in Boston was notable because the etiologic relation of bovine to the human disease are given prominent consideration. It is evident that veterinary medicine is alive to the importance of controlling bovine tuberculosis as it enters into the human problem, as well as its relation to economics.

Dr. E. C. Schroeder, of the United States Bureau of Animal Industry, contended that *bovine tuberculosis can be eradicated* by a broad public policy of the general application of the tuberculin test and destruction of diseased animals. Already bovine tuberculosis has been reduced twenty (20) per cent. in the past five years, and many pure bred herds are entirely free. Dr. John F. Devine, of Goshen, N. H., stated that "we can never eradicate human tuberculosis while we nourish it with the bovine."

Breeders with the largest interests are endorsing radical measures, but the difficulty lies in dealing with small herds, for the loss of cattle is a severe tax on the man of limited means. In order to meet this objection the government must provide for an adequate indemnity.

Considerable notice has been taken by the press of the views of Dr. Maurice Fishberg, expressed during the meetings of National Tuberculous Association, relating to marriage by those afflicted with the chronic form of tuberculosis. It is generally believed that such patients should not be given any general instructions in regard to important details of life or treatment, especially in daily papers, but rather have every feature of a case passed upon by a physician who is competent to decide such questions. The general publication of opinions of this sort may do great harm and lead to mental distress, for it is perfectly well known that although a pregnant woman may appear to be doing well, after parturition the disease sometimes develops very much more rapidly.

If the statement had been published in a more conservative way, with instructions to always submit the question to a capable physician, less harm would have resulted. It has become the fashion to publish as much medical matter in the daily press as the editors feel may be of interest and can be made spectacular. It would be of advantage if such matter could be supervized by one with a judicial mind trained in medicine.

Another matter reported among the subjects discussed by the American Institute of Homœopathy relating to tuberculosis may also be referred to in this connection. It was stated that alfalfa and clover had been found to be of value in treating the disease. Two generations ago clover was in use among the laity as a cure for cancer, and while we all hope that more effective methods of treatment will be discovered, history should lead to careful investigation and rigid scrutiny of any drug treatment before it is made public. The people have suffered so many disappointments we should feel that premature proclamations should not be made.

The recent article by Dr. Hawes on the treatment, since given publicity in England, is very pertinent.

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A BUST OF MORTON FOR THE HALL OF FAME. SEND YOUR CONTRIBUTION NOW.

In the election of Dr. William T. G. Morton to the Hall of Fame, the allied professions of medicine and dentistry have been singularly honored. By their overwhelming vote, the electors have also evidenced the appreciation of the public at large for the beneficence of anesthesia.

Recently, at the Annual Dinner of the American Anesthetists in Boston, during the American Medical Association Week, Dr. S. Adolphus Knopf, the elector most responsible for the honoring of Morton, said it would be a proud privlege for the Associated Anesthetists to place a bronze bust of Morton in the niche assigned him by the electors. This is to be done in celebration of the diamond jubilee anniversary of Morton's demonstration of ether anesthesia.

The Associated Anesthetists, as well as other prominent leaders of the allied professions, are therefore urging all those interested to make a substantial contribution for this purpose.

Send your check or money order at once, to F. H. McMechan, M.D., Sec'y-Treas., Associated Anesthetists, Lake Shore Road, Avon Lake, Ohio.

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MEDICAL NOTES.

Plans have been announcel for the dedication of the new building of the Peking Union Medical College, erected by the China Medical Board of the Rockefeller Foundation.

The ceremonies will include an international medical conference during the week beginning Sept. 15—participated in by scientists from America and Europe.

The following members of the board of trustees will leave this country and England during the summer and be present at the meeting: Dr. George E. Vincent, president of the Rockefeller Foundation; Dr. Paul Monroe, chairman of the board of trustees; John D. Rockefeller, Jr.; Martin A. Ryerson of Chicago; Dr. William H. Welch of Johns Hopkins University; J. Oriol Armitage of the Society for the Propagation of the Gospel in Foreign Parts, England; James L. Barton of Boston, secretary of the American Board of Commissioners for Foreign Missions; E. H. Hawkins of the London Missionary Society, England; J. Chistie Reid of the Medical Missionary Association of London, England.

The following medical scientists from the Western Hemisphere have accepted invitations and will be present to take part in the international medical conference: Dr. William H. Welch, Johns Hopkins University; Professor Tuffier of Paris; Dr. A. B. Macallum, McGill University, Montreal, Canada; Sir William Smyly of Dublin; Dr. R. T. Leiper, London School of Tropical Medicine; Dr. Francis W. Peabody, Harvard University Medical School; Dr. George de Schweinitz, University of Pennsylvania; Dr. Florence Sabin, Johns Hopkins University; Dr. S. S. Goldwater, Mt. Sinai Hospital, New York; Dr. Thomas Cochrane of London; Dr. J. G. Clark, University of Pennsylvania; Dr. Victor G. Heiser, International Health Board; Dr. Richard M. Pierce, Rockfeller Foundation.

Dr. Seth C. Gordon, one of the best known surgeons in New England, died June 22, at his residence, Portland, Me., at the age of 91, after an illness of several years.

Dr. Gordon was surgeon of the 13th Maine volunteer infantry in the civil war. From 1896 to 1900 he was the Maine member of the Democratic national committee. He had been vice-president of the American Medical Association. He was a native of Fryeburg.

Trustees of the American Institute of Homeopathy adopted a resolution condemning regulations under the Volstead prohibition enforcement act which restrict "the honest practice" of medicine and urging a revision "in the interests of the public health." A committee was appointed to confer with Wayne B. Wheeler, general counsel for the Anti-Saloon League of America, concerning a revision program.

Brig.-Gen. Sawyer, President Harding's physician, who is a member of the board of trustees, joined in the protest against the regulations and Mr. Wheeler, who also was present, said he was willing to go more than half way in recommending a program for the preservation of "the necessary rights of the medical profession.

The trustees' resolution, which will be voted on by the full institute tomorrow, said the objections raised had no connection with propaganda either for or against prohibition, but involved the right of the physician to select the remedies he is to use and to determine in what quantity they shall be administered.

THE first annual meeting of the Hampshire County Public Health Association was held at the people's Institute, Northampton, on June 24, 1921. The following program was carried out;

Presidential Address, Dr. E. E. Thomas, Northampton.

Report of Executive Secretary, Miss May Mooney, R. N., Northampton.

Report of Treasurer, Mr. H. E. Bicknell, Northampton.

Nursing Possibilities in Public Health, Miss Florence M. Caldwell, R. N., Director Springfield Visiting Nursing Association.

Mr. Frederick Edwards, Educational Secretary of the Massachusetts Anti-Tuberculosis League of Boston, was to speak on "The Modern Health Crusade," but was unavoidably detained on his way to Northampton.

"Tuberculosis in Children," Dr. Henry D. Chadwick, Superintendent of the Westfield State Sanatorium. Paper discussed by Dr. Charles E. Perry, Superintendent of the Hampshire County Sanatorium.

Short, informal talks were given by Miss Frysinger and Miss Quel of the States Relations Series of the U. S. Department of Agriculture, Washington, D. C., and John D. Willard, Director of Extension Service, Massachusetts Agricultural College, Amherst. The report of Miss Mooney, and the address by Dr. Chadwick were ordered printed for wide circulation throughout the county, as representing the extent of the work already accomplished, and also the aspirations of the Society to prevent tuberculosis by early attention to the nutrition and general supervision of under-nourished children.

At the business meeting which followed, the present officers were unanimously reëlected. It was voted to join the National Association for the Prevention and Control of Tuberculosis. The matter of membership in the County Association was discussed, and it was the consensus of opinion that membership should be universal, to include every man, woman and child in the county, and with that end in view, to urge everyone to support the organization by purchasing seals at Christmas time, every year, in lieu of dues arbitrarily fixed.

EDGAR A. BOWERS of Framingham has been appointed State Registrar of Vital Statistics. Mr. Bowers is a member of the legislature and has served his town as its clerk for five years. He is known to be very well qualified for this position. It has long been the wish of the medical profession that a physician might occupy this position, but for some reason there has been opposition to this plan, and since the profession cannot be represented in this important department, the choice will be recognized as a fitting recognition of Mr. Bowers ability.

EVERY physician should carefully read the report of the Department of Public Utilities and be prepared to deal with the agent of the telephone company in signing contracts. Either the agents do not understand the decisions of the department or have been instructed by the company to ignore them, for it has been reported from Worcester that efforts have been made by agents to put into effect the higher rates without explanation.

Every district or city could get into action, and insist that the decisions of the department be complied with.

A SPECIAL despatch to the *Boston Globe* states that John Henry Hartwell died as a result of sepsis contracted during an operation for appendicitis. He neglected a pricked finger, finishing the operation before giving it attention. Dr. Hartwell was born in Worcester, in 1873, graduated in medicine from the Medico-Chirurgical College, Philadelphia, in 1910, and was a member of the staff of the Anderson Hospital.

A SERIOUS EPIDEMIC OF SMALLPOX occurred recently in Fort Wayne, Ind., the spread of which was traced definitely to the office of two chiropractors. The disease was not recognized by them. The city and state boards of health intend to prosecute these men. Do we want chiropractors in this state?

At this season of the year, physicians should warn their patients of the danger of vacation tyhoid. If children accompany parents, warn them of unripe fruit.

Children saved are of greater importance than birth statistics.

Week's Death Rate in Boston.—During the week ending June 18, 1921, the number of deaths reported was 161 against 177 last year, with a rate of 11.08 against 11.42 last year. There were 19 deaths under one year of age against 26 last year.

The number of cases of principal reportable diseases were: Diphtheria, 44; whooping cough, 23; scarlet fever, 1; measles, 77; tuberculosis, 27.

Included in the above, were the following cases of non-residents: Diphtheria, 6; scarlet fever, 3; tuberculosis, 4.

Total deahs from these diseases were: Diphtheria, 1; scarlet fever, 3; measles, 1; tuberculosis, 9.

Included in the above, were the following non-residents: Diphtheria, 1; scarlet fever, 1; tuberculosis, 1.

Week's Death Rate in Boston.—During the week ending June 25, 1921, the number of deaths reported was 204 against 162 last year, with a rate of 14.04 against 10.45 last year. There were 24 deaths under one year of age against 16 last year.

The number of cases of principal reportable diseases were: Diphtheria, 48; scarlet fever, 31; measles, 105; whooping cough, 11; typhoid fever, 2; tuberculosis, 74.

Included in the above were the following cases of non-residents: Diphtheria, 10; measles, 2; typhoid fever, 1; tuberculosis, 10.

Total deaths from these diseases were: Diphtheria, 3; whooping cough, 2; tuberculosis, 16.

Included in the above were the following cases of non-residents: Tuberculosis, 3.

Miscellany.

REPORT OF A SUCCESSFUL RESECTION OF THE ESOPHAGUS

AUTHOR'S ABSTRACT.*

Extrapleural resection and plastic of the thoracic esophagus. An original method. Report of a successful case, without gastrostomy, by Howard Lilienthal, M.D., F.A.C.S., New York. Read before the American Surgical Association, at its meeting, in June, 1921, in Toronto.

This operation was devised to minimize the danger of septic mediastinitis. It was recognized that before opening the esophagus the mediastinum must be sealed off by a healing process which should have advanced to the stage of granulation.

The patient was a 35-year old man, with a partially obstructing squamouscell carcinoma below the arch of the aorta.

At the first step, the operator lifted a skin flap about three inches in width and ten inches in length, which was outlined by an incision beginning at the eighth interspace, close to the spine, passing obliquely forward parallel to the ribs, thence downward and then backward to a point about three inches below the place of beginning. This flap was used in fashioning the new esophagus to take the place of the resected part. A six-inch subperiosteal resection of the ninth rib was then made and the pleura stripped forward, away from the posterior mediastinal region. The eighth, seventh and sixth ribs were cut through, near their spinal attachments, after peeling the pleura away, and then the tenth rib also was divided. The pleura could now be pushed forward, exposing the organs within the mediastinum through a wound large enough to permit the surgeon to work with both hands in its depths. With a stomach tube in the esophagus, this structure was easily identified and stripped from the pleura and aorta. The fibers of the plexus gulae of the right vagus were divided. The fusiform swelling which marked the tumor within the gullet was about an inch and a half below the arch of the aorta. The skin flap was placed in the wound so that it partly encircled the mobilized esophagus, the cutaneous surface toward the viscus. The first step of the operation was concluded by packing the wound with gauze. The patient could swallow fluids. Two weeks later, without anesthesia of any kind, the wound was spread apart, and the tumor-bearing section of the esophagus was resected. Nourishment was now given through a stomach tube passed into the lower esophageal opening, and later through an Einhorn tube passed from mouth to stomach through the gap left by the resection. The pedicle of the skin flap was cut across in another week. There was later contraction of the cicatricial tissue at the mucocutaneous margins, making it necessary to divide the strictures by stellate incisions, and thereafter bougies were passed frequently The final step was to close the posterior esophageal opening by suture and to make a plastic operation to cover the defect in the patient's back with skin by the use of sliding flaps. A few days after this final procedure, liquids could be swallowed without leakage, and soon all wounds were healed and any soft food could be taken normally.

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* This paper is to be published in full in *The Annals of Surgery*.

A number of drawings were made at the operation and are reproduced in the article. There are also roentgenograms and a photograph.

Other cases in which this exposure was made are reported, but all proved inoperable. The conclusions are as follows:

1. That transpleural resection of the esophagus has a forbidding mortality.
2. That fatal infection follows the primary opening of the esophagus within the mediastinum.
3. That it is feasible to take an extrapleural exposure of the posterior mediastinum large enough to permit the operator to see clearly and to work safely with both hands.
4. That resection of the esophagus in the posterior mediastinum can be done by dividing the operation into two stages. At the first, the esophagus is freed from its attachments and the mediastinum is sealed. At the second, 10 to 14 days later, the resection is performed.
5. This procedure deserves a fair trial by thoracic surgeons.

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THE SHEPPARD-TOWNER MATERNITY BILL.

HEARINGS in Washington on the Sheppard-Towner Maternity Bill are scheduled for July 12. There is great and growing opposition on the part of physicians, mothers, medical societies and all sincere opponents of bureaucracy and paternalism.

Senator Moses has introduced a *real* maternity bill, which would provide *local maternity hospitals*, and the training of local nurses, under *local, county and State* authorities. So, if you are in favor of the Federal Government doing something of benefit in this matter, be sure to include an endorsement of *"the Moses Amendment"* if you approve it. Some persons believe that even the *"Moses Amendment"* would lead to abuses and *final* concentration of power in a Federal Bureau, and that this subject should be left exclusively with the States, but the Moses Amendment *provides* for local control and at least *does something* for *mothers and babies*, and does *not* allow centralized Federal coercion.

The Sheppard-Towner "Maternity" Bill, on the contrary, *concentrates* full power in the Federal Children's Bureau; provides *nothing* but "advice" and "investigation" and "lecturers" and "JOBS; actually *prohibits* the use of any part of the fund for *hospitals or equipment* (Sec. 13)—so it can all be used for *salaries* —and allows the Federal Children's Bureau to send out *propagandists* and *"amateurs"* "to incur such travel and other expenses as it may deem necessary." (Sec. 6.)

The "Maternity" Bill propagandists are bitterly opposed to the "Moses Amendment." They don't want *local hospitals for mothers, but Federal jobs for themselves* and the expansion of the U. S. Children's Bureau into a vast "maternity system" as in foreign countries, with Mrs. Kollontai's system as their ideal of "the most comprehensive."

Massachusetts can settle this question for itself if the legislature will deal with it in a logical manner. The JOURNAL contends that the Federal Government should restrict its activities to the dissemination of information on this subject.

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THE SUPREME TEST.

MANUFACTURERS throughout the country are confronted with the most dangerous situation of this generation.

It is more than a crisis. It is a drive for the jugular vein of many leading industries. If this characterization is regarded as sensational, let any business man examine the so-called Volstead "anti-beer" bill, known in the official records of the House of Representatives at Washington as H. R. 6,752.

The average business man, who has read in the newspaper dispatches from Washington that an "anti-beer" bill was pending, has seemingly shrugged his shoulders. Few, if any of them, have given a thought to the possibility that the measure affected them in the slightest degree.

Yet this bill spells more disaster to the industries of this country than any other proposal in years. It is true that the seeming purpose of the latest Volstead bill is to upset previous rulings concerning beer as a medicine. If it stopped there, no substantial objection could be offered against it.

Under the cloak of preventing the use of beer as medicine by physicians, H. R. 6,752 would permit any chemical or other manufacturing industry using or depending upon alcohol to be shut down within thirty days. And what is more dangerous, no appeal could be made to the courts.

That is only one provision of the proposed new law. Another section would require the posting of permits for twenty days before this basic chemical for many industries could be secured. Power is also given to compel the posting of a copy of the application upon the factory or business house. Then any one of a group of local, state or national officials may file a protest to it. By the time the red tape involved was unsnarled, any reputable company, concern or corporation might be in the hands of the Sheriff or the Federal Courts in a bankruptcy proceeding.

If any more sensational or autocratic procedure is possible, the scene of it would probably be located in Russia or some other remote center of governmental disorder.

However one may feel about alcoholic beverages, we are dependent on alcohol for many essential uses.

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INDUSTRIAL RESEARCH LABORATORIES.

RESEARCH facilities and the development of activities of American industries are to be described in the forthcoming revision of *Bulletin of the National Research Council*, Number 2, "Research laboratories in industrial establishments of the United States of America." Only 300 such laboratories were listed in the first edition, but it is hoped that several hundred new names will appear in the revision, and that a more nearly complete reference list will thus become available. The general demand for the first edition of the *Bulletin* shows the wide interest in this subject, and the importance of having every laboratory which devotes even a portion of its time to research properly listed.

The Council requests information from directors of research who have not already supplied it. The following data are wanted: Name and address of firm and address of laboratory; name of director of research; number on laboratory staff (classified as chemists, engineers, bacteriologists, etc.); approximate proportion of time spent on research; chief lines of research; unusual features of equipment; research laboratory space; date of organization of research laboratory and annual expenditure for research. Confidential information is not desired.

It is also requested that librarians in the service of the industries please bring this notice to the attention of the proper officials in their organizations.

This material should be furnished as promptly as possible to the Research Information Service, National Research Council, 1701 Massachusetts Avenue, Washington, D. C.

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INFANTS THRIVE ON MATERNAL NURSING.

BREAST-FED babies have a better chance for life than artificially fed babies. This fact is brought out in a brief monograph entitled "Breast Feeding," which has just been issued by the U. S. Department of Labor through the Children's Bureau.

Studies made in many different countries have demonstrated that the death rate among artificially fed babies is at all times higher than among breast-fed babies; that where for any reason breast feeding is the custom, the mortality rate is low in spite of other unfavorable factors; and that when for any cause breast feeding is increased in a community the infant mortality rate is lowered. Studies made in overcrowded and poverty-stricken districts of New York, Chicago, and other large cities indicate very clearly that where by race or custom it is the practice to feed infants at the breast the infant mortality rate is relatively low. It has been further shown that the good effect of breast feeding is manifested not only in infancy, but in later childhood and even in adult life.

The problem of insuring breast feeding to babies involves economic, educational and health aspects. As factors to be considered in promoting maternal nursing, the report includes high standards of medical and nursing care before and after babies are born, instruction of all mothers in the importance of breast feeding and in the means of promoting it, and the interest of the community in this phase of child welfare. The report emphasizes the importance for the nursing mother and her family of an adequate income in order that the mother may have proper nourishment and freedom from overwork, and from the strain and worry that are inevitably attached to insufficient income.

Copies may be obtained of the U. S. Department of Labor, Children's Bureau.

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AMERICAN NURSES' MEMORIAL IN FRANCE.

OF all the permanent memorials of the Great War that Americans have left in France, none gives more promise of growing in importance than the new Florence Nightingale Training School for Nurses established at Bagatelle, in the beautiful Bordeaux suburb of Talence. It is dedicated to the memory of the 284 American nurses who gave their lives in the war, and was given by the nurses of America through small individual subscriptions.

The School was founded twenty years ago by Dr. Anna Hamilton, who on the memorable day of June 5th last, when the corner-stone of the new building was laid, sat quietly in the shade of a great elm and modestly acknowledged the shower of felicitations from Americans and French men and women of prominence on the fruits of her twenty years' struggle to raise the standard of nursing in France.

Seldom has there been witnessed in France a Franco-American ceremony more touching. The weather was almost ideal — a beautiful sunny afternoon, following by an evening of cool and gentle breeze. The scene was set in the park of Bagatelle, a charming estate given to the hospital by Mademoiselle Elizabeth Bosc of Bordeaux. Under a great fifty-year-old tree and flanking the corner-stone was a stand draped in American and French flags erected by Major Frederick W. Patterson of Baltimore, head of the Graves Registration Services in the Bordeaux area.

Rear Admiral Thomas P. Magruder, American Naval Attache in France, who came from Paris, and the bluejackets of the U. S. destroyer Childs, ordered from Cherbourg especially for the occasion, represented the American Navy. A handful of the sailors remained aboard their boat to show it off to thousands of eager French people who filed on board. At Bagatelle, Admiral Magruder was in charge of the dedicatory ceremonies. Speaking in such good French that it proved a very pleasant surprise to the French people, he thanked the French nurses for their ministrations to the American sailors who were in the nearby hospital during the war.

Sailors were lined up on one side of the stand and uniformed nurses on the other. To many, the presence of the American bluejackets, with their round white caps, recalled days of a few years earlier when they were engaged on more serious business. The jackies enjoyed the day, and when the ceremonies were over they joined the French nurses in a glass of picnic lemonade on the lawns of the estate. They assisted in the singing of the "Marseillaise" and "The Star-Spangled Banner" played by the band of the 144th French Infantry Regiment.

The stone was laid by Miss Helen Scott Hay, of Savanna, Ill., chief nurse of the American Red Cross in Europe, on behalf of Miss Clara D. Noyes, of Washington, President of the American Nurses' Association and Chairman of the Fund for the Memorial, who was unable to be present. Miss Hay explained that the money for the building was collected through the three national organizations of America: The American Nurses' Association, including all American trained nurses, the League of Nursing Education, which represents the nurse educators, and the National Organization for Public Health Nursing, which includes nurses engaged in public health work, as well as a large number of non-professional people.

The gathering, which included more than 100 Americans who came from Paris and other distant parts of France, listened to speeches by Colonel Robert E. Olds, of St. Paul, American Red Cross Commissioner in Europe; Dr. Kendall Emerson, of Worcester, Mass., medical director for the same organization, and many other Frenchmen and Americans. As the corner-stone was set in place, an American Marine bugler sounded "Taps." Finally Miss Hay read an address from Miss Noyes.

The Mayor of Talence was present with members of the City Council, many of whom delivered speeches praising the American people for their continued interest in the well-being of France in her post-war struggle.

M. Robert Billecart, secretary-general of the prefecture, said: "America, our true and disinterested ally during the war, did not finish her work among us during the conflict, but remains on with her wealth and her heart to help us in peace. The end of the tempest was decided by the great wind from the West. The same generous wind is breathing again today to help put an end to human suffering. Long live America with France by her side, the two Republics united in love of justice."

At the conclusion of the ceremonies prayers were offered by the Reverend Robert W. Davis, of Englewood, N. J., formerly Commissioner of the American Red Cross in Austria, who is now living on a farm near Bordeaux.

At a dinner in the evening served by the uniformed nurses in a beautiful garden of the estate, bronze commemorative medals were presented to all the Americans by the French nurses.

Among the Americans present were the American Consul, Theodore Jaeckel and Mrs. Jaeckel, of Philadelphia; Major H. E. Wadsworth, U. S. A., and Mrs. Wadsworth, of Idaho; Mr. and Mrs. D. B. Levis, of Chicago; Mr. J. D. Child, of Portland, Ore.; Mrs. S. B. Jacobson, of New York; Major F. W. Patterson, of Baltimore; Mr. E. W. Moales, of New Orleans; Captain W. A. Newell, of Boston; Commander Andrew S. Hickey, U. S. N., and Mrs. Hickey; Mr. and Mrs. F. C. Norton and Miss Norton, of Portland, Me.; Mr. Vale McGuire, of Detroit; Mr. Clement T. Lauer, of Chicago; Mr. G. A. Dupuis, of Boston, Mass.; Mr. and Mrs. Salomon Reiss, of Bordeaux; Mr. and Mrs. F. H. Poulin, of Boston, Mass.; Mr. Guy C. Goodwin, of Manchester, N. H.; Miss Mary S. Gardner, of Providence, R. I.; Mrs. Mary Breckenridge, of Fort Smith, Ark.; Miss A. Heath and Miss Evelyn Walker, of New York.

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EXCERPTS FROM BULLETIN OF SANITARY INSTRUCTION.

Concerning Pasteurization.

HEALTH officials today are practically unanimous in the opinion that pasteurization, properly performed, is the one effective agency for insuring a clean, safe, public milk supply.

They are equally unanimous in the opinion that pure milk is the essential food for infants and also that it has the highest food value for growing children and for even adults. Pasteurization of milk, as is generally known, consists in heating the milk to a temperature of 145 degrees Fahrenheit, maintaining that temperature for twenty to thirty minutes and then rapidly cooling the milk to 45 degrees Fahrenheit. This process destroys the dangerous germs in the milk, thus rendering it safe for use, and does not destroy the cream line, which every housewife likes to see on the top of the bottle of milk she purchases, and by which she judges the quality of the milk.

Pasteurization now is almost universal throughout the country. There is no large American city in which its milk supply is not pasteurized; in fact the general tendency today is that all market milk with the exception, of course, of certified and tuberculin tested milk must be pasteurized.

Home Care of Milk.

Care of milk in the home is of prime importance from the standpoint of health.

A few hints as to the hot weather care of milk in the home are embodied in the following

Don'ts.

Don't put milk on window ledge to save ice.

Don't place milk in open, unclean vessels exposed to air and flies.

Don't use milk over twenty-four hours old for the baby.

Don't mix old and new milk.

Don't have janitor take in milk, unless he puts it into an icebox.

Don't fail to wash bottle with scalding water.

Don't fail to return empty bottles promptly.

Don't economize on ice. Ice is cheaper than milk.

Don't fail to keep milk cold.

Don't forget that good milk is good food.

It is also well to provide a covered box, at almost no cost at all, in a shaded place where your milk man can put the milk, so that it will be protected from flies and animals. Before opening, wipe the mouth and cap of bottle dry with a clean cloth.

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TWENTY-FOURTH ANNUAL MEETING OF THE MEDICAL LIBRARY ASSOCIATION.

THE twenty-fourth annual meeting of the Medical Library Association, whose membership includes all of the larger medical libraries of the country, and a large number of individual members, consisting of those interested in furthering medical library work, was held in Boston, June 6, 7, 8, 1921. The business meetings of the Association were held in the Boston Medical Library. In addition to the address of the President, the program contained the report of a Committee on Standard Classification, and the system used in the Boston Medical Library, and this, as explained by the Chairman, Mr. James F. Ballard, was adopted, as being the most practical solution for meeting the perplexing problems of classification. This was followed by a discussion on Reference Aids, which was opened by Mrs. Grace W. Myers, of the Treadwell Library of the Massachusetts General Hospital. An evening meeting, which was largely attended, was addressed by the President, Dr. John W. Farlow, of the Boston Medical Library. This was followed by an interesting paper, illustrated by lantern slides, by Dr. George S. Huntington, of New York City, entitled "Some historical facts concerning the catoptron of Johannes Remmelinus, and the superimposed anatomical plate during the early part of the 17th century." Following this, Dr. Malcolm Storer, of Boston, read a paper entitled "Interesting medical medals."

In addition to the regular program, visits were made to the various libraries in Boston. In each case, the members of the Association were shown over the buildings, and the various points of interest were explained. Visits were made to the Harvard Medical School Library, Boston Public Library, Harvard College Library, Treadwell Library and the Boston Athenaeum Library. Of particular interest was an exhibit of rare medical items from the library of Dr. Edward C. Streeter of Boston, spread in the exhibition room of the Boston Public Library. The exhibit was specifically epidemiological, the essential literature on fevers from Hippocrates to Lancisi, with a few sections such as Plague, Syphilis, Venesection superadded.

The permanent quarters of the Medical Library Association are in the Medical and Chirurgical Faculty Building, at 1211 Cathedral Street, Baltimore, Maryland.

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RÉSUMÉ OF COMMUNICABLE DISEASES.

May 1921.

General Prevalence.

Of communicable diseases, 7,392 cases were reported for May, as compared with 9,650 for April. This is the smallest number reported, so far, this year. There were decreases in the reported incidence of all the more important communicable diseases, except typhoid, which numbered 168 cases as compared with 44 for the previous month.

Diphtheria, which was quite prevalent during the early part of the year, has steadily decreased each month, showing a lessened incidence; total for May, 645.

German Measles exceeded the reports for any month this year; total for May, 128, as compared with 101 for April.

Gonorrhea and Syphilis were reported in about the usual numbers, 449 for the former, 217 for the latter.

Measles, although still prevalent, has shown a marked decrease; total for May, 2,449, as compared with 3,293 reported during April.

Lobar Pneumonia. There were 374 cases reported, the smallest number since November, 1920.

Scarlet Fever—649 cases of scarlet fever were reported for this month. This is also a marked decrease as 1,016 cases were reported during April.

Whooping Cough also shows a decrease; total for May, 487, as compared with 707 for April.

Typhoid Fever, which totaled 44 for April, now reaches the high mark of 168. This is due to its reaching epidemic proportions in a neighboring city.

Rare Diseases.

Actinomycosis was reported from Cambridge, 1.

Anterior Poliomyelitis was reported from Boston, 1; Cambridge, 1; Danvers 1; North Andover, 1; Southbridge, 1; Watertown, 1; total, 6.

Dog-bite, requiring anti-rabic treatment, was reported from Boston, 2; Brookline, 1; Granby, 1; Lawrence, 1; Lowell, 2; Webster, 1; Winthrop, 1; total, 9.

Encephalitis Lethargica was reported from Boston, 3; Ludlow, 1; Lynn, 1; Milton, 1; Waltham, 1; total, 7.

Epidemic Cerebrospinal Meningitis was reported from Boston 6; Boylston, 1; Brockton, 1; Fall River, 1; Lowell, 1; Marlboro, 1; Northampton, 1; Revere, 1; Worcester, 1; total, 14.

Septic Sore Throat was reported from Boston, 2; Cambridge, 1; Chicopee, 1; Somerset, 1; Springfield, 1; Watertown, 2; total, 8.

Tetanus was reported from Boston, 2.

Trachoma was reported from Boston, 5; Chelsea, 1; Fitchburg, 2; Lynn, 2; Wakefield, 1; total, 11.

Trichinosis was reported fro mWinchester, 5.

Obituary.

DR. GEORGE DANIEL McGAURAN.

DR. GEORGE DANIEL McGAURAN, a fellow of the Massachusetts Medical Society, died at his home in Newburyport, June 15, 1921, aged 70 years.

He was born in the city of Quebec, P. Q., July 19, 1849, was educated at St. Anne's College, Laval University, at the Eclectic Medical College of the City of New York, and at New York University Medical College, taking an M. D. at the last in 1892, and settling in New York City. He removed to Lawrence in 1899 and to Newburyport in 1915. In 1903 he joined the Massachusetts Medical Society, and again in 1919. Dr. McGauran was city physician of Newburyport at the time of his death, and was consulting physician to the Anna Jaques Hospital. One of his interests in life was the movement for the betterment of Ireland, having planned the auxiliary Irish Land League in America, while living in New York, having as collaborators John Boyle O'Reilly and Patrick A. Collins of Boston. The cause of death was cancer of the liver.

He is survived by his widow, who was Mary H. Burke, a sister of ex-Mayor Robert H. Burke of Newburyport.

Correspondence.

PROHIBITION AND THE MEDICAL PROFESSION.

Mr. Editor:

At the recent meeting of the House of Delegates of the American Medical Association in this city, Dr. Victor C. Vaughan, of Michigan, presented the following Resolutions from the Council on Health and Public Instruction:

"WHEREAS: Reproach has been brought upon the medical profession by some of its members who have misused the law which permits the prescribing of alcohol; and

"WHEREAS: A ruling of the Attorney-General has led to the inference that beer is regarded by the medical profession as a therapeutic agent and that its use is demanded by the profession, therefore be it

"RESOLVED: That the American Medical Association reiterates and reaffirms its judgment, expressed by a vote of the House of Delegates in 1917, that alcohol as a everage is detrimental to the human economy, and that its use as a food or in therapeutics as a tonic and a stimulant has no scientific basis; and be it further

"RESOLVED: That the American Medical Association now expresses its disapproval of the acceptance of a small minority of the profession of the position of being purveyors of alcoholic beverages."

A boisterous discussion ensued, which was terminated by a motion to refer the resolutions to the Council of Scientific Assembly for consideration, the results thereof to be presented to the House of Delegates at the next annual session. In other words, the "wets" prevented the adoption of the resolutions. Until further action, however, the American Medical Association stands opposed to the use of alcohol as a beverage and in favor of the limited use of the drug as a therapeutic measure, similar, in fact, to that of other narcotics, or habit-forming agents.

The use of alcohol by the profession in the treatment of the sick and injured has shown a very marked change during the past fifty years. According to data furnished the writer by Dr. J. H. McCollom, late Superintendent of the Boston City Hospital, the average daily cost of alcohol for each patient in that institution for the year 1865 was four cents. In 1914 the daily cost was four mills. In other words, the cost of alcoholic liquors of all sorts in that hospital had fallen from four cents a day in 1865 to one-tenth of that amount half a century later. The records of the Massachusetts General Hospital show that the cost of alcohol per patient in 1889 was fifty-seven cents, while in 1907 it was only thirteen cents. (Richard C. Cabot, M.D.). The experience of a large majority of physicians in private practice is along the same lines. It is pretty generally acknowledged by the profession that, while alcohol has a clinical use in the treatment of the sick and injured, yet its field of usefulness is much more limited than was formerly supposed. In the opinion of a very large proportion of the leading physicians, the daily use of alcohol is detrimental and should not be countenanced; in fact, it should be emphatically discouraged.

In accordance with public opinion, a national prohibition act has been incorporated in the Constitution. It has been in effect nearly two years. Its results are strikingly in evidence in the great decrease in arrests for drunkenness; in the small number of inmates in our penal institutions, some of them having been closed and others having no more prisoners than attendants; in the diminished work of the Courts, police and other officers of the law, to say nothing of the large increase in savings and the great improvement in the economic and domestic conditions of the community.

The therapeutic use of alcohol naturally and properly has been placed in charge of the medical profession. It is an important trust. It demands and will receive our honest and faithful efforts in carrying out the intentions of the incorporators of the eighteenth amendment to the Constitution. Infinitely more good than harm will result from a sensible, efficient enforcement of the act. Every honest and law-abiding physician will assist the authorities in their endeavor to secure the utmost benefit of this great economic reform. Only in this way can we merit the confidence of the Government and the respect of the people for whose welfare this epochal movement has been accomplished.

GEORGE W. GAY, M. D.

Boston, June 17, 1921.